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STAFF PAPERS

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The authors of the papers in this issue have received considerable assistance from their colleagues on the staff of the Fund. This general statement of indebtedness may be accepted in place of a detailed list of acknowledgments.

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STAFF PAPERS

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National Currency Counterpart of Drawings on the Fund*

THE QUESTION HAS BEEN RAISED what effect transactions with the International Monetary Fund have on the monetary situation within a country when the foreign exchange purchased from the Fund is used to meet a balance of payments deficit. The fear has been expressed that, at least in some countries, the national currency counterpart of the resources obtained from the Fund may be used to prolong the inflation which has caused the payments deficit.

There are various technical arrangements in force in different countries for dealing with the national currency derived from the sale of foreign exchange acquired from the Fund. In some countries, the national currency counterpart is kept on deposit to the credit of the Fund at the central bank. In other countries, the government substitutes a noninterest-bearing note for the national currency counterpart of a transaction with the Fund. It is with the effects of the latter practice that this paper is primarily concerned.

Deficits and the Money Supply

A country may have a balance of payments deficit, on current and ordinary capital account, for various reasons. When the deficit is large and persistent, one cause is almost certain to be excessive aggregate expenditure. Such a deficit shows that the money supply is larger than is necessary to finance an appropriate level of domestic expenditure at stable prices. The excessive money supply may have arisen from the creation of credit for the government, business, or consumers. The deficit in the balance of payments will tend to reduce the money supply. In the absence of other factors, including import restrictions, the balance of payments deficit would continue until its cumulative effect is to reduce the money supply and aggregate domestic expenditure to a proper relationship to home output plus the net inflow of capital.

In any system in which the monetary authorities sell gold and foreign exchange to the public for making foreign payments, a balance of

*This paper was prepared by the Research and Statistics Department for the information of the Board of Executive Directors.

payments deficit will lead to a direct reduction in the money supply and in bank reserves. As noted at the time of the Bretton Woods discussions, these effects are the same whether the monetary authorities use their own reserves or acquire the reserves from transactions with the Fund.[1] Where the currency of the country is held by other countries as reserves, e.g., dollars or sterling, a deficit in the balance of payments may be accompanied by an increase in banking liabilities to foreigners rather than a decrease in foreign exchange assets. Even so, if the money supply is defined as the amount of currency and deposits held by residents, the immediate effect of a balance of payments deficit will be to reduce the domestic money supply.

Of course, the effect of a balance of payments deficit on the money supply will be offset if credit is expanded to finance a government deficit, investment by business, or spending by consumers. Similarly, if the government acquires foreign exchange from the Fund to meet the balance of payments deficit and then uses the national currency counterpart to finance its own expenditure or to repay debt to the public, there may be no net change in the money supply. In such cases, the absence of any change can best be explained in terms of two offsetting factors: (1) a cash-reducing balance of payments deficit and (2) a cash-increasing transaction of the government or expansion of bank credit. Obviously, monetary and fiscal policy must be concerned with any measures (whether expansion of bank credit or government use of the counterpart) which offset the effect of a balance of payments deficit on the money supply.

Fund Transactions and the Money Supply

It may be helpful to follow the transactions consequent on a balance of payments deficit financed by the use of resources drawn from the Fund. Assume, first, that the central bank acquires foreign exchange from the Fund. The assets of the central bank (in foreign exchange) and the liabilities of the central bank (to the Fund) will be increased. When the exchange is sold, the assets of the central bank (in foreign exchange) and the domestic monetary liabilities of the central bank (currency notes plus deposits) will be decreased by an equal amount. The over-all effect on the accounts of the central bank, after it has sold an amount of exchange equal to what it acquired from the Fund,

[1] See, for example, John H. Williams, *Postwar Monetary Plans and Other Essays* (New York, 1945 and 1947), pp. 8–10.

will be an increase in its liabilities to the Fund and an equal decrease in its liabilities to the public—that is, a reduction in the money supply.[2]

More often, the government itself acquires the foreign exchange from the Fund. In such cases, the government generally sells the foreign exchange to the central bank for national currency. If the government then deposits the currency to the credit of the Fund with the central bank, the effect on the money supply is the same as if the central bank had undertaken the transaction on behalf of the member: after the exchange is sold, there will be an increase in the central bank's liabilities to the Fund and an equal decrease in its liabilities to the public. On the other hand, if the government sells the exchange to the central bank and then substitutes noninterest-bearing notes for the national currency, the ultimate effect on the money supply will depend upon the use to which the government puts the currency.[3]

The effect on the money supply is somewhat more complicated when the government acquires the exchange from the Fund and turns it over to an Exchange Equalization Account, placing noninterest-bearing notes of the government to the credit of the Fund with the central bank or treasury. The government's liabilities (to the Fund) and its assets (claims on the Account) will be increased by an equal amount. In turn, the Exchange Equalization Account's assets (in foreign exchange) and its liabilities (to the government) will be increased by an equal amount. The effect on the money supply will take place when the Account sells the foreign exchange. At that point, the foreign exchange assets of the Exchange Equalization Account will decrease and its national currency assets will increase. If the Account retains these assets as a deposit with the central bank, the money supply will be decreased by an equal amount. On the other hand, if the Account uses the national currency derived from the sale of exchange to repay its obligations to the government, the government will have increased assets in the form of national currency and increased liabilities to the

[2] It makes no difference whether the central bank's liabilities to the Fund are in the form of a deposit or of noninterest-bearing notes of the central bank. In fact, no country has substituted such notes of the central bank for the national currency counterpart of a drawing on the Fund.

[3] This paper does not discuss the monetary effects of the techniques used by members to acquire the gold or convertible currencies to meet their repurchase obligations to the Fund. It should be noted, however, that if a government substitutes its noninterest-bearing notes for the national currency counterpart of a drawing on the Fund and uses the proceeds to finance expenditures or to retire debt, it will be confronted with a "financing problem" when it must undertake a repurchase of its own currency with part of the increase in its monetary reserves. To acquire the gold or convertible currencies for the repurchase, the government would then either have to use part of a budgetary surplus (which it may not have) or have to borrow from the public or the central bank (which it may not be able to do).

Fund which may be evidenced by noninterest-bearing notes. The ultimate effect on the money supply will depend upon how the government deals with the national currency turned over to it by the Exchange Equalization Account.

A slight modification of this case may be worth describing. Assume that a country uses its reserves and then acquires foreign exchange from the Fund to replenish its reserves. There may be no further decline in reserves after the transaction with the Fund. The Exchange Equalization Account, which holds the reserves, will be indebted to the government for the amount of exchange acquired from the Fund, and the government will be indebted to the Fund for an equal amount which may be evidenced by noninterest-bearing notes. The transaction with the Fund will have had no apparent impact on the money supply—it may simply be treated as an accretion of reserves by the Account, financed by borrowing from the government. Fundamentally, the effect of the transaction on the money supply will depend on the manner in which the government *previously* handled the national currency acquired from the sale of foreign exchange by the Exchange Equalization Account which is later replenished by the transaction with the Fund.

Three Types of Government Use of the Counterpart

A reduction in the money supply is always associated with the sale of foreign exchange acquired from the Fund, unless there is offsetting action in connection with a substitution of noninterest-bearing notes of the government for the national currency deposit, or a simultaneous credit expansion. When there is a substitution of noninterest-bearing notes, the effect on the money supply will depend upon what the government does with the national currency it acquires in this way. This can be seen by considering three alternative uses of the national currency counterpart by the government.

First, the government may use the money to repay a debt to the central bank. Such use of the money does not offset the reduction in the money supply resulting from the balance of payments deficit. The liabilities of the central bank in the form of currency and deposits will be reduced. Its assets in the form of claims against the government will also be reduced. There may be a contingent effect, however, that should be noted: If the indebtedness of the government to the central bank is limited by law to a prescribed ceiling, the repayment of the debt to the central bank will make it possible for the government

to borrow again. And if the government borrows and uses a sum equivalent to the debt it has repaid, the effect is the same as if it had used the national currency counterpart for the purposes discussed below.

Second, the government may use the national currency counterpart to repay maturing indebtedness to the public. If the government uses the national currency in this way, the cash balances of the public and the cash reserves of the banking system will be restored to about the same position as before the deficit.[4] The central bank may be able to offset these public debt transactions with open market operations; but positive steps by the monetary authorities would be required to integrate their operations with the fiscal operations of the treasury. In some countries, there are no institutional facilities for open market operations. The central bank could perhaps reduce its own credit operations with the public or with banks and to some extent offset the consequences of the government's public debt operations. In any case, there may be some difficulty in preventing a consequent expansion of the money supply, if the government uses the national currency counterpart to repay its obligations to the public.

Third, the government may use the national currency counterpart to finance expenditure that it might not otherwise have undertaken. The financing of expenditure in this way will restore the cash balances of the public and the reserves of the commercial banks. The contraction in the money supply resulting from the balance of payments deficit will be offset by the expansion in the money supply resulting from the budgetary deficit financed with the national currency counterpart of the transaction with the Fund. Although the effect on the money supply and the cash reserves of the banks will be approximately the same as that attributable to repayment of government debt, use of the counterpart to finance additional government expenditure will differ from its use to repay debt in two respects: (1) the public's holdings of government securities will not be reduced and (2) aggregate expenditure of the government and private sectors combined may be increased. Use of the national currency counterpart of a transaction with the Fund to finance additional government expenditure is in contradiction to the policy that is required to deal with a large and persistent balance of payments deficit.

[4] If the Exchange Equalization Account uses the national currency it acquires from the sale of exchange drawn from the Fund to buy treasury bills in the market, the effect on the money supply will be the same as if the government repaid debt to the public.

Special Cases

There is no doubt that the principal cause of the large and persistent balance of payments deficits that a number of countries have experienced in recent years is excessive aggregate expenditure—that is, inflation. In such a case, a contraction of the money supply is an essential part of any program for restoring a balanced payments position. There may be other instances, however, in which the decline in reserves is attributable to causes of a temporary character, and the monetary authorities may be reluctant to permit a contraction of the money supply in some of these cases.

Suppose, for example, that the export receipts of a country decline because of a cyclical recession in importing countries, which may be expected to pass in a relatively short time. A contraction of the money supply consequent upon a balance of payments deficit may reduce the general level of economic activity, since aggregate expenditure is not excessive. In such a case, the monetary authorities may properly offset all or part of the reduction in the money supply that accompanies a balance of payments deficit. A similar consideration might justify a partial offsetting of the contractive effects of a balance of payments deficit resulting from a crop failure. The point is that a deficit which is expected to be moderate and temporary does not call for a general contraction of credit.

Considerable caution is required in concluding that a balance of payments deficit is likely to be moderate and temporary. Even if the decline in export receipts is attributable to a change in world markets, it does not follow that the monetary authorities would be justified in offsetting the effects of the balance of payments deficit on the money supply. Thus, a fall in export receipts may be caused by an increase in world supply rather than by a reduction in world demand for certain export products. The balance of payments deficit under such conditions may be large and persistent unless remedial action is taken by the monetary authorities. Whatever other measures may be necessary, a contraction of the money supply is called for, and the effects of the balance of payments deficit on the money supply should not be offset.

When a country acts as a reserve center—that is, its currency is held as reserves by other countries—the significance of a decrease in its reserves is somewhat more complicated. If such a country has a balance of payments deficit on current and ordinary capital account (that is, excluding changes in foreign-held balances of its currency), its payments problem is like that of any other country. Where the balance of payments deficit is large and persistent, and is attributable to exces-

sive aggregate expenditure, including foreign investment, the reduction in reserves should be permitted to bring about a contraction in the money supply. Where the balance of payments deficit is expected to be moderate and temporary, the monetary authorities could properly offset all or part of the consequent contraction in the money supply. If the outflow of reserves, however, is due entirely to deficits in the balances of payments of countries which hold the currency as reserves, this is not an indication that aggregate domestic expenditure is excessive or that a contraction of the money supply is required in the reserve center.

A country like the United States, with ample gold reserves, would have no reason to let the money supply contract if there were an outflow of gold because of payments of U.S. dollars by a Latin American country, say, to a European country which held its reserves in London or in the form of gold. Of course, when a country which is a reserve center is itself hard pressed for reserves, it may have to let the money supply contract when there is an outflow of reserves, for that is the only way it can protect its reserve position. For such a country, monetary policy should in any case be directed toward a rapid restoration of its reserves until they are adequate to meet the payments pressures that are inevitably transmitted from other countries to the reserve center.

Monetary and Fiscal Policy

The proper policy for dealing with a balance of payments deficit cannot be independent of a country's reserve position. A country with deficient reserves does not have the alternative of letting a temporary balance of payments deficit or an outflow of capital run its course, confident that its payments position is strong and will soon be restored to balance. For such a country, greater flexibility in monetary and fiscal policy, imposed more promptly and with greater force, is necessary to relieve the strain on its limited reserves.

Even a country with adequate reserves cannot be indifferent to its balance of payments. A large and persistent deficit is likely to indicate not only that its international payments are unbalanced but that the economy is inflated. An effective remedy to restore external balance and internal stability must include measures to reduce public and private expenditure, and monetary and fiscal policy will have to be directed toward this end. The effect of a balance of payments deficit in reducing the money supply will facilitate the making of policy. It

would be a mistake, however, to assume that the automatic reduction in the money supply will obviate the need for more positive measures.

The sale of foreign exchange by the central bank or the Exchange Equalization Account will reduce not only the cash balances of the public but also the liquidity of the banking system, that is, its reserves of central bank funds. Since banks operate on a fractional reserve, legal or customary, the reduction in bank reserves may induce banks to undertake a further contraction of credit. The extent of the induced contraction of credit will depend on whether the banks had previously held excess reserves, on the normal relationship between bank reserves and deposit liabilities, and on the availability of supplementary reserves through borrowing from the central bank.[5]

The monetary authorities may not be able to wait until the cumulative effect of a continued balance of payments deficit has reduced cash balances and aggregate expenditure sufficiently to restore the payments position. Even with the multiple contraction of bank credit, an adequate reduction in the money supply may require such a large depletion of the foreign exchange reserves that the monetary authorities cannot assume the risks of permitting such a succession of balance of payments deficits. Instead, they will have to take steps to compel a further contraction in bank credit and in aggregate expenditure to a level consonant with a proper balance of payments.

Where the excessive expenditure is due in part to an unbalanced budget financed by the creation of credit, it will not be possible to stop the drain on reserves unless public expenditure is reduced and the budget put in order. Governments that persist in large budgetary deficits can do so only because they have access to the credit-creating power of the monetary system. The remedy in such cases is for the government to recognize the damage done to the economy through the inflation that its spending generates. The monetary authorities, in turn, must resist any attempt by the government to use the monetary system to continue deficit financing.

The monetary authorities cannot rely solely on the self-corrective monetary mechanism to restore the payments position. A persistent payments deficit, large or small, calls for a thorough reconsideration

[5] In a country like the United States or the United Kingdom, a balance of payments deficit may not reduce the reserves of the banking system. Thus, if countries that acquire dollars or sterling add these currencies to their reserves by holding additional deposits in commercial banks or by investing the funds in treasury bills or other securities, the liquidity of the banking system in the reserve center will be restored. There may be no secondary contraction of credit, and there may not even be a reduction in the money supply. Monetary policy in a country acting as a reserve center must take into account the manner in which foreign balances are held and used.

of monetary and fiscal policy. There is no substitute for fiscal responsibility on the part of the government and a determined monetary policy on the part of the central bank. It would be unfortunate if the use of Fund resources were to be regarded as a means of avoiding necessary corrective measures or if the substitution of noninterest-bearing notes were to result in intensifying the monetary or budgetary disorders that have given rise to the payments problem.

The Fund is concerned to see that members that have payments difficulties follow policies that will enable them to deal with their payments problems. In any case in which a member uses the national currency counterpart of a transaction with the Fund to prolong an undesirable fiscal or monetary policy, the Fund will undoubtedly wish to call the attention of the member to the undesirability of such practices. The attitude of the Fund should be the same toward any other practices that encourage an undesirable financial policy. Where the Fund is satisfied that the financial policy of a member is suitable for dealing with its payments problem, it would have no reason to be concerned with the fact that the member may substitute noninterest-bearing notes for national currency.

Economic Development in India: The First and Second Five Year Plans

N. A. Sarma*

INDIA'S FIRST FIVE YEAR PLAN covered the period from April 1951 through March 1956; the Second Five Year Plan covers the period from April 1956 through March 1961. The main objectives of planning in India are, broadly, to double real national income in less than 20 years and to double the per capita income in 25 years.

During the First Plan period, national income was expected to rise by 11–12 per cent; the actual increase was over 18 per cent, despite a shortfall in Plan outlays. The success of the First Plan, under conditions of economic and financial stability, prompted more ambitious goals and a bolder approach in formulating the Second Plan. The main objectives of the Second Plan are an increase of 25 per cent in real national income over the five-year period 1956–57 to 1960–61; a large expansion of employment opportunities; rapid industrialization; and reduction of economic inequalities. The emphasis on the development of industry and transport is greater than in the First Plan. The main problem is to step up the rate of investment in the economy. The total cost of the Plan has increased considerably since the estimates were presented, mainly because of two factors: the original costs were underestimated and prices have generally risen, especially prices of imported capital goods. But while difficulties have arisen currently in financing the Plan, particularly in regard to foreign exchange, it is important to stress the progress achieved so far. The technical and administrative tasks have been faced competently, by and large; major projects in steel, irrigation, and power are developing; and there is an unmistakable determination on the part of the Indian authorities to maximize tax resources, limit deficit financing, and take all possible measures to maintain the core of the Plan.

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The Background of Economic Development in India

NATURAL RESOURCES

Of India's total land area of 811 million acres, 89 million acres were unclassified in 1954–55 mainly because they were inaccessible or desert. Of the 722 million acres for which data on utilization are available, 467 million acres were classified as cultivable, but 95 million acres were not cultivated. Excluding fallow, actual sown area in 1954–55 was 315 million acres. With the provision of transport, health, and other facilities, there is some scope for gradual extension of the area under cultivation. In addition to bringing new areas under cultivation, land reclamation prevents loss of land through erosion and regains for use land already thus lost. Nearly 70 per cent of both the total population and the working force are dependent on agriculture. Holdings are small, 70 per cent of all farms being less than 5 acres each. Though about four fifths of the cultivated area is under food crops, large imports of rice and wheat have been necessary in some years. Since dependence on rainfall renders agricultural production unstable, and since 90 per cent of the rainfall in India is concentrated in certain months, covering one third of the year, the provision of irrigation facilities is of prime importance. Only 20 per cent of the cultivated area was irrigated at the end of the First Plan period; during that period, the net addition to irrigated area was about 14 million acres. Larger areas will be irrigated when the projects that were started during the period are completed. Other projects are being undertaken during the Second Plan period. The further addition to irrigated area is placed at 21 million acres, so that total irrigated area in 1960 would be 88 million acres, or about 25 per cent of the cultivated area, against 51 million acres in 1951, or 17 per cent of the cultivated area. The extension of irrigation facilities, through major as well as minor works, is one of the important factors that makes the agricultural prospect brighter. There are ample water resources available. Of the total river water resources, it has been estimated that one third could be turned to beneficial use but that only 30 per cent of this amount was used in 1956.

The minimum estimate of India's firm hydroelectric power potential, according to the Central Water and Power Commission, is of the order of 35 million kw. at 60 per cent load factor; in 1956 installed capacity was only 3.4 million kw. Even with a 20 per cent expansion each year, the installed capacity would reach only 15 million kw. by 1965, or a little over 40 per cent of the estimated firm capacity. At present, there is a deficiency of oil resources in India, the current annual output being one tenth of consumption. The available resources are being sup-

plemented through the use of power alcohol, wherever possible. Exploration for new oil resources is being undertaken over wide regions by the Government, directly as well as in cooperation with major foreign companies; and substantial provision has been made under the Second Plan for the development of the resources. The Indo-Stanvac project is engaged in exploration for oil in West Bengal. A new company was formed in January 1958 to prospect for oil and to exploit the large known resources in upper Assam. India also has fairly large uranium, thorium, and beryl supplies and, when a longer view is taken, it is possible to supplement the coal, oil, and water power resources by atomic energy. Modest beginnings have already been made in this direction. Metallurgical coal reserves are adequate, though not abundant. Considerably large reserves of steam and noncoking varieties are available for power generation. Large deposits of lignite that have recently been discovered would usefully supplement coal resources. The Geological Survey of India, the Indian Bureau of Mines, and the newly established National Laboratories are pressing forward with detailed surveys and investigation of mineral resources. A substantial stepping up of coal production, together with the conservation of metallurigcal coal, proper assessment of the more important deposits of various minerals, the beneficial use of low-grade ores, and the exploration and development of the oil resources are among the main lines of investigation. The country is richly endowed with other important minerals, especially iron ore, gypsum, mica, limestone, and manganese; such minerals as sulphur, zinc, lead, and petroleum are conspicuously deficient and have largely to be imported. India's iron ore deposits are among the world's largest and best, with a 60–70 per cent iron content, and they are almost inexhaustible; the other minerals necessary for large-scale iron and steel metallurgy are also plentiful.

Industrialization and Savings

With such resources as these it was natural that various industries would be set up in India. In the interwar period, such important industries as cotton and jute textiles, sugar, soap, iron and steel, cement, and light engineering were established, partly as a result of the stimulus provided by the policy of discriminating protection adopted from 1922. The *Swadeshi* movement, in which the desire of the people to use domestically produced articles found expression, as well as the circumstances created by World War II, also fostered industrial growth. During the planning phase since 1950, considerable progress has been made by established industries and new industries have been promoted.

Among the new industries established in recent years are petroleum refining, fertilizers, locomotives, telephones, newsprint, machine tools, and penicillin. Even so, India remains primarily an agricultural economy: the agricultural sector (including animal husbandry and ancillary activities) accounts for almost one half of aggregate national output and absorbs 70 per cent of the total working force, whereas industry (including mining and small enterprises) contributes but 16–17 per cent of output and absorbs 11 per cent of the working force.

Estimates of India's national income by industrial origin are available on a systematic and comparable basis since 1948–49; and for certain earlier years, less precise estimates have been made. The aggregate national income (Table 1) in 1956–57 is placed at Rs 114.1 billion, at current prices, giving an average per capita income of Rs 294. At 1948–49 prices (Table 2), the 1956–57 income is estimated at Rs 110.1 billion, or an average per capita income of Rs 284. The rise

TABLE 1. INDIA'S NATIONAL INCOME, AT CURRENT PRICES, CLASSIFIED BY ORIGIN

(In billions of rupees)

	1950–51	1951–52	1952–53	1953–54	1954–55	1955–56[1]
Agriculture						
Crop farming, animal husbandry, and ancillary activities	47.8	49.1	47.1	52.0	42.3	41.0
Forestry	0.7	0.7	0.6	0.6	0.7	0.7
Fisheries	0.4	0.4	0.4	0.5	0.5	0.5
Total	48.9	50.2	48.1	53.1	43.5	42.2
Mining, manufacturing, and small enterprises						
Mining	0.7	0.9	0.9	1.0	1.0	1.0
Factories	5.5	6.4	6.4	6.9	7.5	8.1
Small enterprises	9.1	9.5	9.7	9.8	9.6	9.6
Total	15.3	16.8	17.0	17.7	18.1	18.7
Commerce, transport, and communications						
Communications (post, telegraph, and telephone)	0.4	0.4	0.4	0.4	0.4	0.4
Railways	1.8	2.1	2.0	2.0	2.2	2.4
Organized banking and insurance	0.7	0.8	0.7	0.8	0.8	0.8
Other commerce and transport	14.0	14.6	14.7	14.8	14.7	14.9
Total	16.9	17.9	17.8	18.0	18.1	18.5
Other services						
Professions and liberal arts	4.7	5.0	5.2	5.3	5.4	5.6
Government services (administration)	4.3	4.5	4.6	4.9	5.2	5.6
Domestic service	1.3	1.4	1.3	1.4	1.4	1.4
House property	4.1	4.1	4.3	4.4	4.5	4.5
Total	14.4	15.0	15.4	16.0	16.5	17.1
Net domestic product at factor cost	95.5	99.9	98.3	104.8	96.2	96.5
Net earned income from abroad	−0.2	−0.2	−0.1	0.0	0.0	0.0
Net national output at factor cost = national income	95.3	99.7	98.2	104.8	96.2	96.5

Source: Central Statistical Organization, *Estimates of National Income, 1948–49 to 1955–56* (New Delhi, 1957).

[1] Preliminary; revised total is Rs 100 billion (details not available).

TABLE 2. INDIA'S NATIONAL INCOME, AT 1948–49 PRICES, CLASSIFIED BY ORIGIN

(In billions of rupees)

	1948–49	1949–50	1950–51	1951–52	1952–53	1953–54	1954–55	1955–56[1]
Agriculture[2]	42.5	43.6	43.4	44.4	46.0	49.8	50.3	49.8
Mining, manufacturing, and small enterprises	14.8	14.6	14.8	15.2	15.8	16.5	17.0	17.5
Commerce, transport, and communications	16.0	16.4	16.6	17.3	17.9	18.3	19.1	19.7
Other services[3]	13.4	13.8	13.9	14.3	15.0	15.7	16.4	17.2
Net domestic product at factor cost	86.7	88.4	88.7	91.2	94.7	100.3	102.8	104.2
Net earned income from abroad	−0.2	−0.2	−0.2	−0.2	−0.1	0.0	0.0	0.0
Net national output at factor cost = national income	86.5	88.2	88.5	91.0	94.6	100.3	102.8	104.2

Source: Central Statistical Organization, *Estimates of National Income, 1948–49 to 1955–56* (New Delhi, 1957).

[1] Preliminary; the revised total is Rs 104.8 billion.

[2] Crop farming, animal husbandry, and ancillary activities, and forestry and fisheries.

[3] Professions and liberal arts, government services (administration), domestic service, and house property.

in national income during the First Five Year Plan period, 1951–52 to 1955–56, is estimated at 18.4 per cent, and that in per capita income at 11.1 per cent. For the large numbers of people who have only subsistence living standards, there is little capacity or inclination to save. Moreover, data on consumer expenditures collected by the National Sample Survey indicate that the nonmonetary sector covers more than one third of the whole economy; as is to be expected, it is much larger (45 per cent) in the rural sector than in the urban sector (10 per cent). In the nonmonetary sector, what little is saved out of current incomes does not take a monetary form and is, therefore, not available as investible funds. Again, particularly in the rural sector, a part of the savings is immobilized in hoards (especially jewelry), and the savings available for productive investment are further attenuated by the preference of certain classes for investment in land and other forms of real estate. For many years, therefore, net investment as a proportion of national income remained low and stationary, at about 5–6 per cent. In these conditions, a stepping up of savings/investment is an essential requisite if development is to proceed apace.

DEFENSE REQUIREMENTS

While investible resources are thus very limited, not all the additional resources that are raised become available for development; there is a certain unavoidable increase in nondevelopment expenditures

of government, i.e., on administrative and security services. Expenditures on defense (revenue and capital combined) amounted to Rs 1.86 billion in 1952–53 and Rs 1.90 billion in 1955–56; they are estimated at Rs 2.91 billion in 1957–58 and Rs 3.05 billion in 1958–59, the estimate for 1958–59 being less than 20 per cent of central, and 13 per cent of total public, expenditures. India, through its democratically elected government, follows a policy of nonalignment and has to meet its defense bill wholly from its own resources. This diversion of resources, limited and necessary as it is, imposes a certain strain on the resources budget for development.

Foreign trade

Until recently, the imports and exports of India each formed about 5 per cent of national income, and there was little external economic assistance that helped to maintain or improve the standard of living. Until the thirties, imports consisted mostly of finished consumer goods, and exports were chiefly tea, jute goods, and raw materials. The trade pattern has undergone a change in recent years, however, with industrial raw materials and capital goods figuring more prominently in imports and manufactures in exports. In some years, marginal imports of foodgrains have helped to maintain food consumption, especially in urban areas, and imports of capital goods have become essential to the country's development program; part of these imports has been financed through loan and grant assistance. Thus, at the present stage, not only has foreign trade increased quantitatively in relation to the size of the economy (imports constituted about 10 per cent of national income in 1956–57), but it has also become a significant factor in determining the pace of development.

Development and employment

Attempts are being made to limit, through family planning, the rate of population growth in India, but there is need for comprehensive research into population problems, with a view to evolving an appropriate population policy. However, as the mortality rate gradually declines with improved medical facilities and health services, and as population control is bound to be slow in becoming effective on any substantial scale, it has to be assumed that the population will grow more or less at the observed rate. Correspondingly, with the rise in population there is a continuing addition to the working force. According to the census of 1951, 40 per cent of the total population are workers; and, of the total working force, more than 70 per cent are

engaged in agriculture and ancillary occupations, 11 per cent in mining, manufacturing, and hand trades, and the rest in commerce, transport, and other services (Table 3). In 1955, the total working population was estimated at 153 million, of whom 110 million were in the agricultural sector; it is expected that by 1960 the total working force will rise to 164 million, of whom 116 million will be in agriculture; only subsequently will there be a slight decline in the agricultural proportion, so that by 1970 agriculture will account for about 65 per cent of the total working population.

The structural and seasonal character of unemployment in the Indian economy is as follows: there is substantial unemployment, of about 4 million in the urban sector (according to a preliminary estimate by the National Sample Survey) and of about 3 million in the rural sector (on the basis of the results of the Agricultural Labor Enquiry, and the likely impact of the First Plan on rural employment); the large labor force engaged in agriculture is employed for only part of the year so that there is a serious degree of underemployment; nor does any major shift from agriculture to other gainful occupations seem practicable. Superimposed on this unemployment and underemployment is an addition to the labor force of about 2 million a year, which is likely to involve a worsening of disguised unemployment, that is, an increase in underemployment. Under the circumstances, it is appropriate, in devising techniques to deal with the problem, to view it not only in its aggregate magnitude but also in its distinct rural and urban aspects.

From the standpoint of employment in India, and especially of rural employment, some deliberate decentralization of economic activity is desirable in order to provide increased employment opportunities in supplementary fields for those who are dependent on agriculture. This

TABLE 3. DISTRIBUTION OF WORKING FORCE IN INDIA, ACCORDING TO CENSUS DATA

(In hundred thousands)

Class of Worker	1941			1951		
	Self-supporting persons	Earning dependents	Total	Self-supporting persons	Earning dependents	Total
Agricultural total	690	171	861	720	283	1,003
Nonagricultural total	304	65	369	328	101	429
Production other than cultivation	*131*	*33*	*164*	*123*	*44*	*167*
Commerce	*60*	*9*	*69*	*60*	*13*	*73*
Transport	*14*	*2*	*16*	*17*	*3*	*20*
Other services and miscellaneous	*99*	*21*	*120*	*128*	*41*	*169*
Total working force	994	236	1,230	1,048	384	1,432

Source: *Final Report of the National Income Committee* (New Delhi, 1954).

decentralization will be less costly if it is based on cooperative forms of organization. Decentralization, by and large, in the conditions of the Indian economy, implies the development of small-scale, household industries, requiring little capital. Being labor intensive, such industries provide more employment at the same time that output is increased, but small-scale production is more costly than factory production. On the other hand, aside from the important political and moral considerations involved in preventing the emergence of unemployment, the case for decentralized production to provide greater employment to labor that would otherwise remain unemployed or grossly underemployed appears in better perspective when social costs and returns are considered. When there is a serious shortage of capital, it is necessary not only to increase the supply of capital but also to use capital-conserving techniques; the emphasis should be as much on *better* as on *more* tools. This is the rationale of using improved but fairly simple tools, which do not make undue demands on limited capital resources, in certain lines of industry that are well suited to decentralization and can be carried on in close proximity to agriculture. In agriculture and related hand trades, perceptible improvements in productivity are possible with only small additions to capital, if they are made coordinately with more effective organizational and marketing methods and improved techniques.

At the same time, the role of decentralized small-scale industries in India should not be unduly stressed; care should be taken to see that an inferior technology does not become firmly entrenched in the economy. Although the unemployment-underemployment problem is no doubt serious, it is only as urgent as economic development itself. Therefore, while in certain well-defined sectors development programs may properly be elaborated with employment as a main objective, in the sense of maximizing employment opportunities in the short run, the employment problem as a whole has to be viewed as a longer term one which can be resolved only through a development program that raises the productive efficiency of the entire economy. In the circumstances of India, therefore, highly capital-intensive schemes of industrial development (steel mills) and highly labor-intensive units (handloom industry) may go together; this combination is made easier by the fairly sharp division between the urban and the rural sectors of the economy.[1] The Plan document stresses decentralization of industry

[1] "Working at home or very near home in the villages would be less fatiguing than in factories because the workers would be able to take some rest as and when necessary. Household activities and family life would not be disrupted. . . . Through a policy of industrial dispersal it would be possible to combine the advantages of both economic and political democracy in an effective manner.

from the employment angle, and provision is made in the Second Plan for promoting small-scale production in certain lines; but, as rapid industrialization is a basic goal of planning in India, the content of the Plan actually places greater emphasis on organized industry.[2] By 1960, the relative share of factory establishments in aggregate output vis-à-vis that of small enterprises is expected to be greater than in either 1951 or 1955.

The decentralization of certain lines of industry, related primarily to the rural sector, might also serve to some extent to mobilize "the saving potential" that exists in disguised unemployment. Part of the labor surplus in the agricultural sector may be employed in constructing irrigation works and communications. It would be unrealistic, however, to assume that this saving potential could become an important source of capital formation. Although in recent years the traditional immobility of labor has diminished somewhat with the development of transport and communications and of large urban centers of industry and trade, it is still an important feature of rural life; decades of common living and family ties make it difficult to change this traditional immobility. Present consumption levels are very low and, when some of the surplus labor is diverted to construction projects, those productive workers who are left on the farm are likely to consume more, so that, consequently, aggregate consumption may rise. This is particularly likely in a peasant economy in which nearly 65 per cent of rural consumer expenditure is represented by food items of which, in turn, the proportion of own produce (imputed value) is as high as 60 per cent.

Availability of Trained Personnel: The Priority of Education

An important factor underlying low productivity in India is the inadequacy of educational facilities—general as well as technical. In the initial stages of development, the inadequate supply of competent

This would be a solution entirely in keeping with Indian social and cultural traditions" (Prof. P. C. Mahalanobis, in *Sankhya,* December 1955). ". . . Technological advance may recently have given some advantage to 'deglomerative' tendencies in industry. The Indian movement of industry 'back to the village' is to be supplied ultimately with modern machinery and electric power. It is contrary to the experience of other countries, which have progressed through the division of labor and the saving of overhead capital made possible by urban concentration. Yet it is not inconceivable that India may develop an original pattern of industrialization along these lines" (Prof. Ragnar Nurkse, in *Quarterly Journal of Economics,* May 1957).

For a diagnosis of the character of the unemployment problem in the Indian economy, see B. K. Madan, Reserve Bank of India, *Bulletin,* September and December 1955.

[2] Planning Commission, *Second Five Year Plan* (New Delhi, 1956).

and experienced personnel creates a bottleneck, as training facilities and educational standards cannot be stepped up suddenly. The shortfall in attaining targets under the First Plan was due as much, if not more, to this factor as to lack of other resources or inadequacy of finance. Moreover, as voluntary cooperation and a favorable public response constitute the principal sanction and driving force behind planning in India, improved standards of education must have a high priority if cooperation is to be forthcoming in full measure.

The proportion of school-going children in the age group 6–11 years rose from 30 per cent in 1947 to 40 per cent in 1951 and 50 per cent in 1955–56. At the higher, secondary, stage (age group 14–17 years), even in 1955–56 only 10 per cent of the total were at school. The Indian Constitution directs the State to provide by 1961 for free and compulsory education for all children up to 14 years of age. On the basis of progress attained so far, and with the provision made for further facilities under the Second Plan, the actual results by 1961 would fall markedly short of the goal set under the Constitution.

As far as technical and professional education are concerned, the annual new enrollment in engineering institutions is currently 5,000 for degree courses and 8,000 for diploma courses, compared with 4,000 and 5,000, respectively, in 1951, and 2,500 and 3,000, respectively, in 1947. At present, about 8,000 persons obtain degrees or diplomas in engineering each year; this number is expected to rise to 11,000 by 1960. The number of persons graduating from engineering and technological institutions increased during the First Plan period from 2,200 per year to 3,700. The existing higher institutes of technology are being expanded and new regional institutes are being set up. Various other recommendations of the Engineering Personnel Committee constituted by the Planning Commission are being implemented. The Committee had concluded that, even with the expansion provided for under the Second Plan, it would be necessary to provide for additional training facilities for nearly 2,300 graduates in engineering, including mining and metallurgy; yet another 6,000 persons would need to be trained for posts at lower levels. A National Training Council has been set up to direct an extensive program of technical training for various industries; for the steel industry in particular, a considerable number of persons are being trained both at home and abroad. In agriculture and other fields, down to the village worker, and also in social services, especially in health and medical care, there is a similar shortage.

Technical change, so essential for rapid economic development, cannot be accomplished in isolation; the progress of technology depends on the growth of scientific education and, indeed, on general education

itself. Therefore, while the provision of facilities for technical education can proceed somewhat ahead of general education, in the longer run the two must go hand in hand; a rounded program of expanding all educational facilities is called for, which is necessarily costly. This raises the important question of the priority to be given to education, general and technical, in a development program; in the Indian context, it is undoubtedly a high priority.

A high priority for education is also necessary because the spread of education is one of the surest means of effecting those changes in social attitudes and in institutions which are essential for quickening the pace of development. There are, no doubt, certain beliefs, ingrained by religion and tradition over the centuries, which inhibit development. While legislative measures help in rectifying these attitudes, education also has an important role to play. Even so, as in relation to the problem of population, these attitudes constitute a complex which can be expected to change only slowly. Social relationships cannot be ordered about; they have to grow. However, legislative and institutional reforms can help forward the process of change.

Land reform

With the *Zamindari* system of intermediary land tenures prevailing in large parts of the country and with the fragmentation and subdivision of holdings produced by the increasing pressure of population, the condition of the peasantry in general and of tenant farmers in particular had been unsatisfactory for decades; nearly 45 per cent of total cultivated land was in the hands of intermediaries. The ameliorative measures taken in some Provinces before the war had little effect. In the last few years, there has been considerable progress in the abolition, with provision for compensation, of the *Zamindari* system; and, in 1956, intermediary tenures represented but 8 per cent of the total cultivated area. The total compensation involved has been estimated at over Rs 4.5 billion and is largely paid in marketable bonds or annuity certificates. The program is at various stages of completion in different areas. With the abolition of intermediaries, land tenures are now in the hands of owners who cultivate the land and of tenants who hold land leased from owners. There has also been considerable progress in tenancy reform: the maximum rents payable by tenants have been generally fixed at between one third and one fifth of the produce of the land or its equivalent value, and eviction is permissible only on prescribed grounds. There have been proposals for fixing ceilings on the area cultivated by owners, in terms of a multiple of economic or

family holdings, subject to the overriding consideration of maximization of agricultural output.

While the actual implementation of the provisions of the law is not uniformly effective everywhere because of the weak economic position of tenants in certain areas, and the abolition of the *Zamindari* system and other land reform measures have themselves given rise to certain problems, particularly in relation to agricultural finance, there has, by and large, been a perceptible change in rural relationships. Measures are to be taken during the Second Plan period in relation to production, marketing, and credit which "will lay the foundations for cooperative reorganization of the rural economy." Rapid growth of education and organized cooperation among peasants are essential if land reform is not itself to result in lower production and smaller marketable surpluses and savings. *Bhoodan*, a movement for voluntary gifts of land for distribution among landless cultivators, conceived by Acharya Vinoba Bhave early in 1951, is now extended all over India. This movement, as it gathers momentum, supplements agrarian reforms and other measures for reshaping the structure of agriculture and of rural relationships.

Community development

The Community Development Projects, an integral part of India's Plans, were inaugurated in October 1952, and the National Extension Service, which is less comprehensive in scope, a year later. In each project area the contributions of the people themselves, in cash or in kind, are pooled with the assistance provided by the Government for financing schemes of local development; the people themselves have a large voice in determining the form that local development is to take. By January 1958 the program covered 276,000 villages, with a population of nearly 150 million; over one third of these villages have Community Development Projects and the rest are under the National Extension Service. The objective was to cover the entire rural sector by 1961; it appears that the target date may be put forward two or three years. While, with the help of trained village workers, the dissemination of knowledge of better techniques of production is an important aspect of community development, basically the program aims at releasing the latent energies of the people in a rounded cooperative effort to improve standards of living; the emphasis is on self-help. The tasks of the community development program are thus summed up in the Plan document: "As the program grows in size and the range of activities which it encompasses or influences increases, a great deal of the initiative in implementing it must pass to the people of each local

area. . . . It is necessary to stress that, while the material conditions have to be assured, transformation of the social and economic life of rural areas is essentially a human problem. It is a problem, briefly, of changing the outlook of 70 million families living in the countryside, arousing in them enthusiasm for new knowledge and new ways of life and filling them with the ambition and the will to live and work for a better life. Extension services and community organizations are among the principal sources of vitality in democratic planning, and rural development projects are the means by which, through cooperative self-help and local effort, villages and groups of villages can achieve in increasing measure both social change and economic progress and become partners in the national Plan."

Such are the ambitious sights set for community development. What has been the record so far? The financial provision made in the First Plan and the increased provision in the Second Plan, as well as the administrative and training arrangements that have been evolved, seem adequate. Generally, the voluntary contributions of the people have amounted to one half of the expenditures involved, and the people are becoming increasingly conscious of the Plan and its objectives. Although success has not been uniform, some of the project areas are bristling with effort. A Program Evaluation Organization was set up in 1952 to assess progress periodically. The Program Evaluation Board, which was set up in 1956 with a nonofficial chairman to plan and guide the work of the Evaluation Organization, has observed in its review of the progress so far: "While there has been considerable increase in rural consciousness of economic, and to a smaller extent of social, needs, the objective of stimulating continuing and positive effort based on self-help for promoting social or economic development has been comparatively unsuccessful." As for the results in specific directions, the Report points out that aspects of the program involving physical changes—e.g., constructional and irrigational work, attitudes toward improved means in agricultural production and primary education—have been successful. On the other hand, changes involving social attitudes and organization—e.g., readiness to participate in community centers and to use cooperative forms of organization and *panchayats* for economic and political advancement—have not been so successful. The first series of projects, which were started in 1952–53, have been completed and, after intensive development for three to four years, are now being normalized and placed on a basis which, according to the scheme, should be self-sustaining; in such areas, too, there seems still to be dependence on government initiative and assistance. While such shortcomings need to be carefully examined and corrected, the Board affirms that on the whole community development is perhaps "the most

significant development in India." The Study Team, appointed by the Committee on Plan Projects of the National Development Council, recommended in November 1957 that emphasis in priorities be shifted from welfare activities to economic development aspects and that the target date for covering the whole country be extended by at least three years.

Price mechanism and controls

At the time of devaluation, during the Korean war period, and again in 1957, the main anti-inflationary policies adopted when there was a threat of inflation were general and indirect. The bank rate was raised and other measures taken to curtail private credit, and additional taxes were levied to limit the deficit financing of government outlays. While physical controls, including rationing and extensive price control, were used, as in many other countries, during the war and the early postwar years, there has been greater reliance in recent years on more general monetary and fiscal measures. No doubt some direct controls, including the licensing of new investment and allocation and price regulation in respect of a few commodities (coal, steel, and cement), are operative. With a view to stabilizing food prices, measures were also taken in June 1957 under the Essential Commodities Act to prevent hoarding of certain foodgrains. The choice of techniques of control in the Second Plan indicates, however, that no breaking away from the competitive price system as it operates at present is envisaged; as stated in the Plan document, "A democratic system of planning eschews direct commandeering of resources and it operates mainly through the price mechanism." As and when needed, both over-all fiscal and monetary disciplines, for regulating economic activity generally and channeling resources in desired directions, as well as specific controls and allocations to regulate activity in particular sectors or subsectors and to limit consumption of individual commodities, would be used.

Role of Private Enterprise

Agriculture, the larger part of industry (both organized and unorganized), and trade are now in the private sector of the Indian economy. Aggregate public expenditures formed less than 15 per cent of national income even in 1956–57, i.e., after the First Plan was completed and the Second Plan commenced. Although the public sector is to be expanded in the coming years, through a larger share in the new investment activity formulated under the Plan, an important role is

assigned to the private sector. The extension of the public sector is dictated mainly by the requirements of rapid economic development and the need to build very large power, transport, and industrial projects. The share of public undertakings in the estimated net output of factories is about 3 per cent, and by 1960–61, the end of the Second Plan period, it is expected to rise to only 7 per cent. The Plan document sums up the attitude toward the private sector as follows: "The public sector has to grow—and rapidly—and the private sector has to conform to the requirements of the Plan. There has necessarily to be a great deal of dovetailing between the two sectors, and it is recognized that the private sector has to be given the opportunity and facilities to function effectively within the field allotted to it." Data on company finances published by the Taxation Enquiry Commission and by the Reserve Bank show a rate of return in private industry averaging about 8 per cent in postwar years, as measured by net profits (after company taxation) in relation to net worth (paid-up capital plus reserves).

There is no discrimination within the private sector in tax or other matters between domestic enterprise and foreign enterprise. Foreign capital investment has been fairly important in certain lines, such as tea plantations, mineral oils and products, cigarettes, jute manufactures, and utilities. According to the Reserve Bank's Survey of India's Foreign Liabilities and Assets, aggregate foreign business investment in India, in terms of book value, was Rs 4.8 billion at the end of December 1955; of this total, more than 80 per cent was direct investment, most of it from the United Kingdom. During 1948–55 there was an increase of Rs 1.9 billion in foreign private capital, including reinvested profits of branches and subsidiaries of foreign companies. The conditions governing foreign investments in India, old and new, were broadly set out in the Prime Minister's statement in Parliament in April 1949, and recently reaffirmed: "Government would expect all undertakings, Indian or foreign, to conform to the general requirements of their industrial policy. Government do not intend to place any restrictions or impose any conditions which are not applicable to similar Indian enterprise. . . . Foreign interests would be permitted to earn profits, subject only to regulations common to all. . . . Government have no intention to place any restriction on withdrawal of foreign capital investments, but remittance facilities would naturally depend on foreign exchange considerations. . . . If and when foreign enterprises are compulsorily acquired, compensation will be paid on a fair and equitable basis." In pursuance of this basic policy, even when exchange reserves have been run down, the existing facilities for remittance of

profits by foreign interests have been maintained. Again, when life insurance business, most of which was in the hands of Indian insurers, was nationalized, the basis of compensation payable to the affected foreign interests was determined in separate consultations with their spokesmen.

The manner in which controls over industry are being administered and the climate in India for private enterprise, especially for foreign enterprise, were summed up in June 1956, i.e., after the Second Plan had commenced, by a British observer, Mr. Stephen Garvin, in a survey for the Federation of British Industries: "The Industries Act, taken together with the control of capital issues, gives the Government the power to regulate the investment of capital in the private sector and ensure the development of private industry along lines desired. Industrialists are brought into close relationship with the official machine and, as in similar circumstances in the United Kingdom, familiar complaints are heard of delay, frustration, and the rest. It must be said, however, that . . . the officials concerned are extremely able and pleasant to deal with, genuinely anxious to help forward any promising venture, and will work hard to see it succeed. . . . The Government of India's relationship with private enterprise industry, however, is by no means confined to the negative function of control. It has taken a number of important positive steps to stimulate industry in the private sector and to aid private industrial concerns . . . it is difficult to accuse the Government of India of any neglect of measures to encourage and promote private enterprise in industry. . . . India is prepared to welcome foreign investment on terms which are not unreasonable, have been conscientiously adhered to, and compare well with those enforced by other underdeveloped countries. . . . India has a good record as far as concerns capital repatriation and remittance of profits. There is no rigid insistence on a majority Indian holding in foreign-initiated enterprises; some one hundred per cent subsidiaries of British firms have been welcomed. The employment of Indian personnel in all possible positions is insisted upon, but not at the expense of managerial experience or technical skill, which it is well understood necessarily accompany foreign capital."[3]

The main lines of industrial policy were set out by the Government of India in a resolution in April 1948, with particular reference to the relative spheres of the public and private sectors. On the eve of the Second Plan, in April 1956, the policy was restated in a second industrial policy resolution, broadly maintaining continuity of approach.

[3] Stephen Garvin, *India: A Survey for British Industrial Firms* (Federation of British Industries).

Industries are divided into three categories: those of which the further development is to be the exclusive responsibility of the State; industries which are to be progressively state-owned, and in which the State will take the initiative in setting up new units, but from which private enterprise is not excluded; and industries whose development is left largely to private effort. Even in regard to some of the industries included in the first schedule, e.g., iron and steel, under the Plan, considerable expansion of the existing private units is allowed and is in fact financially and otherwise assisted by the State. Again, nondiscriminatory treatment is assured: "When there exist in the same industry both privately owned and publicly owned units, it would continue to be the policy of the State to give fair and nondiscriminatory treatment to both of them." Estimates of private investment in organized industry since the inception of the Second Plan, imports of machinery and equipment on private account for replacement as well as for new investment, the relatively large new capital market issues, and the number of licenses granted for the establishment of new undertakings and the expansion of existing undertakings, show that, in the actual implementation of policy, more favorable treatment has been accorded to private industry than was originally envisaged.

Monetary and price trends

The monetary and price history of India has been one of stability. Since India is a member of the sterling area, the value of the rupee vis-à-vis sterling has, with but occasional minor variations, remained stable since before the beginning of the present century. India has always honored its internal and external debt obligations, in regard to principal as well as interest. It is estimated that, at the end of March 1958, the total internal interest-bearing obligations of the Government of India amounted to Rs 40.0 billion, or less than two fifths of the national income, and that total external obligations were Rs 2.1 billion; interest-yielding assets are valued at Rs 34.0 billion, or 80 per cent of aggregate obligations, domestic and foreign. Repayments, in conversion loans and cash, have been made promptly on due dates, and no forced loan has been issued. If government-guaranteed obligations, the sizable authorizations that have been made but have not yet been actually received, and the obligations to the International Monetary Fund are included, but loans repayable in rupees are excluded, India's total external debt as of March 1958 may be placed at about Rs 6 billion (about US$1.26 billion). The annual charge for servicing this debt is moderate and well within the country's capacity to pay.

Before the war, India raised considerable sums in London; during

the war, mainly because of the large recoverable war expenditures incurred by India, it was possible to repatriate the sterling debt and also to accumulate large balances in sterling. Correspondingly, there was a very large expansion of the money supply, inflationary pressures built up, and prices rose. The general index of wholesale prices averaged 308 for 1947–48 (year ended August 1939=100). Industrial machinery and railway rolling stock were depleted during the war, as a result of lack of adequate repairs, maintenance, and replacement; and a considerable backlog of replacement had to be made good after the war. On the whole, the economy emerged from the war weaker than before, with shortages of food and other articles and a multiplicity of controls, and there was probably some decline in real per capita income. The partition of the subcontinent between India and Pakistan at the moment of Independence further disrupted the economy and increased India's food deficiencies. The relief and rehabilitation of large numbers of displaced persons, the defense of Kashmir, the political and financial integration of the former Indian States, many of which were largely feudal in character, imposed a severe strain on the administrative and financial resources of the country in the years immediately following the attainment of Independence, even before the aftermath of war could be fully dealt with.

By about 1950, these transitional problems had, on the whole, been solved, and latent inflation had also been largely worked off. Meanwhile, in September 1949, when sterling was devalued, the Indian rupee, together with the currencies of many other countries, was at the same time devalued by 30.5 per cent in terms of gold and the U.S. dollar. With a view to cushioning the impact of devaluation, various anti-inflationary measures were taken. By about mid-1950 there were indications that the inflationary stimulus of devaluation had spent itself, but before stability could be consolidated, the Korean war had broken out in June 1950, and the inflationary upsurge associated with this outbreak raised the general index of prices from 396 in June 1950 to a peak of 458 in April 1951. These developments again gave rise to speculative activity, and there was a sharp increase in the demand for funds during the busy season of 1950–51; the increase in the money supply in 1950–51 (when Plan outlays had not yet commenced) was Rs 1.04 billion. Among the policy measures taken to subdue inflationary trends was the raising of the bank rate in November 1951 from 3 per cent to 3½ per cent, together with a change in open market policy, according to which the Reserve Bank was to refrain, save in exceptional circumstances, from buying government securities to meet the seasonal requirements of banks. The new monetary policy and the steps taken by the Government in the fiscal and other fields strengthened the

disinflationary forces that were in operation internally and abroad and, after the break in February 1952 in the prices of certain commodities that were the object of speculative interest, there was by mid-March 1952 a sudden and marked fall in the price index to 365, 8 per cent below the pre-Korean level. Some measures were taken to arrest the decline in prices, lest recessionary trends should set in.

This was the general economic and political background at the time the First Five Year Plan was undertaken. The adoption of the Constitution and the political and financial integration of the different parts of the country afforded the political stability that was a prerequisite; the administrative framework had stood the strain of partition and its aftermath; the problem of relief and rehabilitation of displaced persons was reduced to manageable proportions, and the distortions caused by war and partition had in the main been corrected; devaluation, on the whole, proved a corrective to the imbalance in foreign trade; the Korean boom turned out to be short-lived. Once the major problems of transition were out of the way, it was necessary to concentrate efforts on speeding up economic development. There have been vicissitudes from time to time, but, on the whole, since the attainment of Independence the monetary and price situation has caused little concern until recently, and India has been able to combine development with economic stability. As pointed out above, national income in real terms is estimated to have risen by 18.4 per cent during the period of the First Plan. While the money supply with the public rose during this period by 10.4 per cent, to Rs 20.4 billion as at the end of March 1956, the general index of prices declined somewhat. In contrast to a large balance of payments deficit in 1951–52, which was due mainly to emergency food imports, there was an addition to reserves in the next four years.

Developments in 1956 and 1957

With the accelerated tempo of the Plan after 1953–54, substantial and increasing deficits appeared in government accounts. The over-all budgetary deficit of the Government of India (i.e., decline in cash balances plus borrowing from the Reserve Bank) amounted to Rs 1.6 billion in 1955–56 and to Rs 1.9 billion in 1956–57; for 1957–58, the deficit was estimated at Rs 2.8 billion, after taking into account additional tax receipts of Rs 880 million. The revised estimates for 1957–58 place the over-all deficit higher, at Rs 3.8 billion, mainly because of a short-fall in receipts from market loans and small savings and a larger transfer of revenues to State Governments pursuant to the recommendations of the Second Finance Commission; the holdings of treasury

bills by the Reserve Bank increased by Rs 4.0 billion between March 29, 1957 and March 28, 1958. These deficits, together with the expansion of bank credit to the private sector, had an expansionist effect on the money supply, which increased by Rs 1.23 billion in 1954, Rs 2.15 billion in 1955, and Rs 1.31 billion in 1956. At the end of December 1957, the money supply with the public aggregated Rs 22.75 billion—Rs 15.26 billion in currency and Rs 7.49 billion in deposit money—which was Rs 970 million, or 4.4 per cent, more than at the end of December 1956. Thus within two years the index of money supply (1953=100) rose to 120; it rose further to 127 at the end of December 1956 and to 133 in December 1957. The comparatively moderate rise in 1956 and 1957, at a time when deficits in government finances were growing and bank credit was expanding, is attributable to the contractionist influence of the large balance of payments deficits.

Commercial bank credit to the private sector increased in 1956 by 26 per cent. The total credit extended by the scheduled banks, which account for most of India's banking business, reached Rs 9.33 billion in May 1957 (an amount equal to 76.1 per cent of their net liabilities), against Rs 6.36 billion at the end of 1955 and Rs 7.86 billion at the end of 1956. Thus, in spite of the considerable expansion of deposits, the position of the banks came to be increasingly overextended, and the pressures on their liquidity and monetary stringency in general were intensified. Therefore, while the higher levels of banking activity largely reflected the growth of economic activity and increased imports under the impetus of the Plan, the credit trends were disquieting and had to be corrected. As the strain upon the liquidity of the banks increased, they were obliged to liquidate some of their investments and to resort to increased borrowing from the Reserve Bank. Various measures were taken to deal with the speculative part of the expansion and also generally to restrain bank credit.

Selective credit controls have been systematically applied through Reserve Bank directives to the banks to limit their advances against foodgrains and other commodities, the latest such directive being issued on March 22, 1958. The interest rate mechanism also has been applied to some extent. Under the so-called Bill Market Scheme, the Reserve Bank's lending rate against the security of eligible commercial paper was raised from 3 per cent to 3¼ per cent on March 1, 1956 and then to 3½ per cent in November 1956; the effective rate was raised to 4 per cent from February 1, 1957, when the stamp duty on usance bills was increased. At the same time, the Reserve Bank increased its lending rate on advances against government securities from 3½ per cent to 4 per cent. The bank rate itself was raised from 3½ per

cent to 4 per cent on May 16, 1957. With the simultaneous lowering of the stamp duty on usance bills to $\frac{1}{8}$ of 1 per cent, the effective rate for borrowing under the Bill Market Scheme thus became $4\frac{1}{8}$ per cent. At the end of June 1957, the Governor of the Reserve Bank drew the attention of banks to certain features of the credit situation and urged cautious lending policies. In August 1957, the banks were requested to reduce aggregate bank credit from the level at that time of Rs 8.8 billion to Rs 8 billion by mid-October 1957.[4] The policies of the Reserve Bank of India were directed to what has been termed "controlled expansion," but gradually emphasis shifted to positive restriction. Credit policy seems to have been effective in controlling credit expansion. On March 28, 1958, scheduled bank credit was Rs 9.6 billion (66.4 per cent of net liabilities), against Rs 9.0 billion (76.6 per cent of net liabilities) a year earlier. Bank credit, which had expanded by 26 per cent in 1956, rose by 9 per cent in 1957. The rise in bank credit during the 1957–58 busy season up to the end of March 1958 was Rs 951 million, compared with a rise of Rs 1,394 million in the corresponding period of the previous busy season.

The re-emergence of inflationary pressures was reflected in a continued rise in prices after the middle of 1955, at first moderate, but substantial in 1956. The general index of wholesale prices (1952–53 =100) was 112.1 in August 1957, the highest since the upsurge of prices at the time of the outbreak of hostilities in Korea, against 93.5 in December 1955 and 107.9 in December 1956. The food group showed the largest rise, partly as a result of the decline in output of foodgrains after 1953–54. The authorities have taken various specific steps to curb the rise in prices, in addition to the more general disinflationary measures. These steps have included arrangements for larger imports of wheat and rice, especially under the agreements concluded with the United States under U.S. Public Law 480 and with Burma, the establishment of a network of fair price shops for the distribution of foodgrains released from stocks, the formation of certain wheat and rice zones, and restrictions on interzonal movements of rice and wheat. As stated above, the Reserve Bank also curtailed bank advances against specified commodities, including foodgrains and cloth. After August 1957, prices declined; this movement, which was in part seasonal and related to the movement of new crops to the market, was also in part

[4] Scheduled bank credit on October 18, 1957 was actually Rs 8.5 billion. The purpose of the Reserve Bank's request was to enable the banking system to enter the ensuing busy season, which normally runs from November to April, in an improved position. The busy season is related mainly to the movement of crops to the market, and is characterized by increases in note circulation and bank credit.

a result of the measures taken to check price increases. In December 1957, the general price index averaged 107, and in March 1958 it was 105.4.

Since the inception of the Second Five Year Plan, India's balance of payments has shown a substantial deficit. The sterling balances of the Reserve Bank of India, the principal part of India's foreign exchange reserves, declined from Rs 7.46 billion ($1.57 billion) at the end of March 1956 to Rs 2.98 billion ($626 million) at the end of December 1957. The problems which thus arose for the implementation of the Plan are examined in detail in a later part of this paper. With a view to correcting the serious imbalance in the payments position, import policy was made more restrictive from January 1957. At the same time, despite a large reduction in foreign exchange reserves, the money supply continued to rise.

Faced with a serious decline in foreign exchange reserves and rising domestic prices, as well as with the prospect of larger Plan outlays and an increased measure of deficit financing in 1957–58, determined and effective steps had to be taken immediately if the recrudescence of serious inflationary pressures was to be curbed. The policies adopted included the credit measures referred to above; a substantial increase in taxation; measures to stabilize food prices and to prevent speculative hoarding of stocks; various steps to conserve foreign exchange; and, above all, readjustment of Plan outlays. On the whole, it appears that by the end of 1957 inflationary pressures in the Indian economy were contained. The current trends in the economy are indicated in Table 4. However, as stated in the economic survey presented with the 1958–59 budget, despite the recent decline in prices and the relative improvement in monetary and credit trends, "the economic situation is basically one in which there is a continuous pull, on balance, in the direction of inflation. There also remains a sizable gap in the foreign exchange resources required for the Plan. For maintaining price stability as well as for achieving a better balance in external account, an increase in savings, a continuance of fiscal and monetary discipline and of the efforts to secure external assistance, and an adjustment of developmental programs so as to bring them into a more even relationship with available resources are called for."

The Five Year Plans: Formulation and Progress

Planning procedures

Pioneering work in the discussion of planning was done by the National Planning Committee set up by the Indian National Congress before World War II. Immediately after the war, a Planning Depart-

TABLE 4. SELECTED ECONOMIC INDICATORS IN INDIA

	1953	1955	1956	1957		Most Recent
Gross official reserves (end of period; million dollars)						
Gold[1]	247	247	247	247		
Inconvertible currencies	1,518	1,544	1,113	625		561 (Mar. 28, 1958)
Total	1,765	1,791	1,360	872		
Balance of payments (million dollars)						
Exports	1,126	1,370	1,323	933	(Estimates;	
Imports	−1,241	−1,530	−2,123	−1,949	Jan.–Sept. 1957)	
Net nontrade items, including capital	179	261	373	446		
Over-all balance	64	101	−427	−570		
Budget[2] (billion rupees)				Budget	Revised	1958 Budget
Current receipts	4.10	4.81	5.63	6.68	6.72	6.85
Current expenditures	−4.01	−4.41	−4.74	−6.32	−6.67	−7.12
Capital account receipts[3]	2.18	2.81	3.39	5.72	5.01	6.86
Capital account expenditures	−3.08	−4.81	−6.13	−8.92	−8.86	−8.58
Surplus or deficit (−)	−0.81	−1.60	−1.85	−2.84	−3.80	−1.99
Rupee securities held by Reserve Bank (end of period; billion rupees)	4.96	5.89	8.47	12.42		14.10 (Mar. 28, 1958)
Net borrowing from Reserve Bank (billion rupees)	−0.53	0.96	2.58	3.95		
Domestic private credit (outstanding at end of period for scheduled banks; billion rupees)	4.61	6.36	7.89	8.58		9.62 (Mar. 28, 1958)
Interest rates						
Bank rate	3½	3½	3½	4	(Since May 16, 1957)	
Government bond yield (end of period)	3.65	3.73	4.11	4.23		4.23 (Mar. 28, 1958)
Security price indices (end of period; 1949–50 = 100)						
Government	90.3	91.0	89.7	89.1		89.4 (Mar. 29, 1958)
Variable dividend	98.1	130.6	117.4	95.9		97.9 (Mar. 29, 1958)
Money supply (end of period)						
Amount (billion rupees)	17.09	20.47	21.78	22.75		23.29 (Feb. 1958)
Index (1953 = 100)	100	120	127	133		
Notes in circulation (billion rupees)	10.82	13.19	14.23	14.64		
Agricultural production index (July 1949–June 1950 = 100)	114	116	123	....		
Industrial production index (1951 = 100)	106	122	133	137		
Wholesale price index (end of period; 1952–53 = 100)	97	94	108	107		106.1 (Mar. 29, 1958)
Gold, spot price (end of period; rupees per tola)	81.79	94.13	104.97	108.41		111.53 (Mar. 28, 1958)

Sources: Reserve Bank of India, *Report on Currency and Finance, 1956–57. Bulletin*, December 1957, January 1958, and March 1958, and *Weekly Statistical Supplement to the Bulletin*, April 5, 1958 (Bombay); *International Financial Statistics* (Washington), April 1958; Government of India, *Budget of the Central Government for 1958–59* (New Delhi); and IMF staff estimates.

[1] Dollar balances of the Government of India and banks amount to about $75 million.

[2] Budget data are for fiscal years (beginning April 1) 1953–54, 1955–56, 1956–57, 1957–58, and 1958–59.

[3] Budget classification "from sales of treasury bills."

ment was set up at the Centre, and postwar reconstruction schemes began to be drawn up by the Centre and the Provinces. What came to be known as the Bombay Plan was advanced by a small group of prominent industrialists in the private sector; this envisaged a development outlay of Rs 100 billion over a period of 15 years, and it evoked wide interest. Even before the First Five Year Plan was inaugurated, blueprints of various major projects, including multipurpose schemes and steel plants, were under study, and some important projects had been commenced. The Planning Commission was set up in March 1950, by a resolution of the Government, to "make an assessment of the material, capital, and human resources of the country, including technical personnel, and investigate the possibilities of augmenting such of these resources as are found to be deficient in relation to the nation's requirements; formulate a Plan for the most effective and balanced utilization of the country's resources; on a determination of priorities, define the stages in which the Plan should be carried out and propose the allocation of resources for the due completion of each stage; indicate the factors which are tending to retard economic development, and determine the conditions which, in view of the current social and political situation, should be established for the successful execution of the Plan; determine the nature of the machinery which will be necessary for securing the successful implementation of each stage of the Plan in all its aspects; appraise from time to time the progress achieved in the execution of each stage of the Plan and recommend the adjustments of policy and measures that such appraisal may show to be necessary; and make such interim or ancillary recommendations as appear to it to be appropriate either for facilitating the discharge of the duties assigned to it, or on a consideration of the prevailing economic conditions, current policies, measures, and development programs, or on an examination of such specific problems as may be referred to it for advice by Central or State Governments."

A draft outline of the First Five Year Plan was presented to the country in July 1951, as a document "for the widest possible public discussion." The views expressed by various interests—industry, commerce, labor, farmers, municipal committees, and other local authorities—were taken into account, and, after further examination in Parliament, state legislatures, and elsewhere, the First Plan, covering the period April 1951–March 1956, was finalized in December 1952. Preliminary work on the Second Five Year Plan commenced after April 1954, when the Planning Commission had requested state governments to arrange for the preparation of district and village programs, especially in agriculture, rural industries, and cooperation, as "the district

is still the pivot of the whole structure of planning [and] . . . local planning is the essential means for securing the maximum possible participation and voluntary effort." By March 1955 a "plan-frame" was available, which, together with the suggestions by the Planning Commission's panel of economists, was generally approved by the National Development Council in May 1955. A Draft Outline of the Plan was published in February 1956 for general information, and the Second Plan, covering the period April 1956–March 1961, was finalized in May 1956.

The authorities and the public at the state and local levels have been given a considerable measure of initiative in formulating regional and local schemes of development. The various schemes are coordinated by the Planning Commission and dovetailed into a broad framework which also incorporates the major national schemes, relating to the development of power, transport, and industry, which are formulated largely by central ministries; in the process, the whole program is pruned to a magnitude which can be accommodated broadly within the estimated resources. At various stages, public discussion of the Plan—of resources and outlays, structure, and the order of priorities—is facilitated. Finally, while the central departments and agencies are responsible for the execution of those projects which are in the central sphere, each State has its part in the Plan, and local bodies actively participate in the implementation of local schemes. The whole program of community development is in the local sphere, and its success depends mainly on the enthusiasm and response of the people. Thus, Indian planning is not too centralized and is not imposed from above, but seeks to release the dynamic energies of the people by stressing regional and local development. The National Development Council, which was set up in August 1952, and which includes the Prime Minister of India, the Chief Ministers of all the States, and members of the Central Cabinet and of the Planning Commission, is the apex body that makes major policy changes in regard to the Plan and ensures that the Plan is implemented throughout the country as a single, coordinated whole.

Objectives of planning

The main long-term objectives of planning in India are to double real national output in less than 20 years (between 1950 and 1968), and to double per capita real income in less than 25 years (between 1950 and 1974). The broad assumptions underlying these projections are that the population will increase at the rate of 12–14 per cent per decade; that the incremental capital-output ratio will be about 2:1 in

the initial years and rise to 3.5:1 in the later stages, as a shift toward a more capital-intensive pattern takes place, with a time lag of about 2 years between investment and output; that the investment rate (the proportion of total *net* investment to national income) will rise steadily from an estimated 5 per cent in 1950 to 7 per cent in 1955, 11 per cent in 1960, 14 per cent in 1965, and 16–17 per cent by 1970, and remain at that level thereafter. When the First Plan was drawn up, the objectives for the five-year period 1951–52 to 1955–56 were set at modest levels, so as to minimize hardships in the initial stage of planning; in addition, although the consequences of war and partition had already been largely dealt with, conditions were still somewhat unsettled. National income was expected to rise by 11–12 per cent during this five-year period. In the event, though actual outlays fell short of estimated Plan outlays, national income is estimated to have risen by 18.4 per cent, per capita income by 11.1 per cent, and per capita consumer expenditure by 9 per cent.

The success of the First Plan, under conditions of economic and financial stability, prompted the adoption of more ambitious goals and a bolder approach for the Second Five Year Plan. The main objectives of the Second Plan are a sizable increase, of the order of 25 per cent, in national income so as to raise living standards; rapid industrialization with emphasis on the development of basic and heavy industries; a large expansion of employment opportunities; and reduction of inequalities in income and wealth and a more even distribution of economic power. In more general terms, the Plan seeks to rebuild rural India, to lay the foundations of industrial progress on a wide front, and to advance toward a socialist pattern of society. The socialist pattern is not conceived in a rigid or dogmatic way; its core lies essentially in rapid development and greater equality proceeding side by side. It is postulated that social gain, rather than private profit, should be the determining criterion, with the emphasis on the attainment of positive goals rather than on negative restrictions. The reduction of inequalities should be attained by raising incomes at the lower levels rather than by cutting down other incomes; this objective can be attained only as the end-result of the totality of measures and institutional changes envisaged in the Plan. This includes the changed pattern of investment, the direction given to economic activity by government action, expansion of social services, institutional changes in land ownership and management, regulation of corporations, growth of the cooperative sector, and fiscal measures; a ceiling on incomes is the end-product of all these measures rather than the beginning of a process to be effected through legislation.

With the assumed increase in population of 12.5 per cent during the decade 1951–60, a rise in national income of 25 per cent over five years gives an annual growth rate of 4.5 per cent, and an increase of 18 per cent in per capita income over the five years. These rates of growth require that the proportion of current income devoted to capital formation should rise from 7 per cent in 1955–56 to 10 per cent at the end of the Plan period (1960–61); this, together with the projected inflow of resources from abroad, would raise net investment as a proportion of national income from 7.3 per cent in 1955–56 to 10.7 per cent in 1960–61; the capital-output ratio itself works out at 2.3:1. As for the employment objectives of the Plan, the increase and diversification of employment opportunities are to be of such an order and character as would at least arrest further deterioration in the unemployment situation. Investment programs under the Second Plan are expected to provide additional employment for about 8 million workers, including 2.1 million in construction, 0.8 million in industry and mining, 0.5 million in cottage and small-scale industry,[5] and 2.7 million in trade, commerce, and professions. In agriculture, with increased irrigation and other facilities, additional employment for about 2 million persons is expected, as well as some relief in the conditions of underemployment. However, in spite of the considerable increase in total investment in the Second Plan period and attempts to promote labor-intensive schemes, the additional employment potential of the Second Plan is not much larger than that of the First. A partial explanation of this fact is to be found in the addition of some employment-oriented programs to the First Plan as it proceeded. Furthermore, while the role of small-scale industries has been much discussed and an attempt has been made to foster labor-intensive schemes, the assumption that industrialization should now be the core of development in India means that, on the whole, the Second Plan is more capital-intensive than the First. The output of factory establishments is expected to rise by 64 per cent during 1956–61, but that of small enterprises by only 30 per cent. While the share of small enterprises in the national product is to be almost the same in 1960–61 (8 per cent) as in 1955–56, that of large-scale industry is to increase from 7.8 per cent to 10 per cent. A main part of the expected increase in employment under the Second Plan is in construction, which is of a temporary character. While such activity continues to expand, its temporary character presents no prob-

[5] The Village and Small Scale Industries Committee examined the new employment potential of estimated outlays for the development of small-scale industries. In a Report submitted in October 1955, the Committee placed total outlay at Rs 2.6 billion, of which nearly two fifths would be on cotton spinning and weaving, which would provide new employment for 450,000 persons and fuller, more remunerative, and seasonal employment for nearly 4.5 million persons.

lem; but after construction work has ceased, some time will elapse before the working force is absorbed in other sectors and employment becomes stabilized—all of which only underlines the difficult nature of the employment problem in the Indian economy.[6]

Investment and Output: Restraint on Consumption

Table 5, which shows the trends in national income and investment between 1950–51 and 1955–56, the estimates for the Second Plan period, and projections for a longer perspective, makes possible a closer investigation of the targets of the Second Plan, and especially of the savings rates and capital-output ratios postulated in the Plan. The two objectives, viz., the rate of increase in investment and the growth of national income, cannot both be targets; the latter is but an *estimate* of the average rise in national product based on the magnitude and pattern of the proposed investment. Investment alone constitutes the target. Moreover, proposed outlays and estimates of resources have to be considered in financial as well as real terms and, therefore, at (assumed) constant prices. If prices should rise, both would have to be revised. In considering the (financial) resources budget, estimates of receipts from taxes and borrowings are made without regard to the impact of deficit financing and price increases. Briefly, the problem is to step up the rate of investment in the economy, i.e., to direct a larger proportion of national income into investment, the static position of which largely explains the prolonged economic stagnation in the past. If the ratio of investment to national income is to rise, the ratio of consumption to income must fall; as long as national income is rising, this can be effected by diverting a significant and increasing proportion of additional income to investment. There would then be no actual reduction in consumption but only restraint on the increase in consumption for the community as a whole; it is contemplated that for particular groups there should be some decline, and superfluous (or conspicuous) consumption has to be eliminated. The problem is somewhat analogous to that of financing the war effort; latent inflation can be the means in both cases. However, while war effort is once-for-all, development effort is a continuous process extending over 15–20 years. On the other hand, in contrast to war conditions, real national income expands as development effort is being made, and there is a definite prospect of a subsequent rise in consumption. But in the initial

[6] The dilemma is not peculiar to Indian development. Experience in Italy since 1950 shows that high rates of investment and of income growth do not necessarily provide an adequate solution for the unemployment problem. A reason for the "large" size of India's investment program lies in the effort to combine the two, by deepening as well as by widening the capital structure.

TABLE 5. ACTUAL AND PROJECTED NATIONAL INCOME, INVESTMENT, AND CONSUMPTION IN INDIA, AT 1952–53 PRICES

I. National Income, Investment, Savings, and Consumption

	1950–51	1955–56	1960–61
National income (billion rupees)	91.10	108.00	134.80
Net investment (billion rupees)	4.48	7.90	14.40
Net inflow of foreign resources (billion rupees)	−0.07	0.34	1.30
Net domestic savings (billion rupees)	4.55	7.56	13.10
Consumption expenditure (billion rupees)	86.55	100.44	121.70
Investment as percentage of national income	4.94	7.31	10.68
Domestic savings as percentage of national income	4.98	7.00	9.70

II. Growth in Income and Investment

	1st Plan (1951–56)	2nd Plan (1956–61)	3rd Plan (1961–66)	4th Plan (1966–71)	5th Plan (1971–76)
National income at end of period (billion rupees)	108.00	134.80	172.60	216.80	272.70
Total net investment, each Plan period (billion rupees)	31.00	62.00	99.00	148.00	207.00
Investment as percentage of national income at end of period	7.3	10.7	13.7	16.0	17.0
Population at end of period (million)	384	408	434	465	500
Incremental capital-output ratio	1.8:1	2.3:1	2.6:1	3.4:1	3.7:1
Per capita income at end of period (rupees)	281	331	396	466	546

III. National Product by Industrial Origin

	1950–51	1955–56	1960–61	Percentage Increase	
	(*billion rupees*)			1951 to 1956	1956 to 1961
Agriculture and allied pursuits	44.50	52.30	61.70	18	18
Mining	0.80	0.95	1.50	19	58
Factories	5.90	8.40	13.80	43	64
Small enterprises	7.40	8.40	10.85	14	30
Construction	1.80	2.20	2.95	22	34
Commerce, transport, and communications	16.50	18.75	23.00	14	23
Professions and services, including government administration	14.20	17.00	21.00	20	23
Total national product	91.10	108.00	134.80	18	25
Per capita income	Rs 253	Rs 281	Rs 331	11	18

Source: Planning Commission, *Second Five Year Plan* (New Delhi, 1956).

phase, when the basic investments are being built, the effort involves considerable strain. The restraint of consumption could be orderly and equitable—or haphazard and inequitable; it would be the former if a plan for resources is adopted *ex ante*, corresponding to the plan of expenditures, and it would be the latter if the easy but slippery road of inflation is followed. Therefore, as the Plan proceeds, rigorous control measures for the restriction of consumption may be necessary. As set forth in the Plan document, however, the degree of restraint on consumption envisaged under the Plan is not very onerous, given the rate of growth in national income and the savings ratio to be attained. The marginal rate of savings is about 22 per cent, which would raise the domestic savings rate from 7 per cent of national income to 9.7 per

cent. In a community where current consumption is low relative to consumption needs, the choice between current consumption and future consumption, which capital formation involves, presents great difficulties, but it cannot be evaded.

In the Indian Plan, simplified aggregate growth models are used in projecting rates of growth; some preliminary work has also been done with input-output tables, and a few commodity balances have been set up in the Plan frame. However, these were not applied extensively in the formulation of the Plan, and the capital-output ratios used—admittedly a rough way of expressing *average* productivity of new capital, taking the various sectors together—are rather conjectural. The available data pertaining to actual new investment and value added in organized industry in India and in other countries suggest, when account is taken of the emphasis on heavy and basic industries in the Indian Plan, that the capital-output ratio in the sector of organized industry may actually be less favorable than is assumed in the Plan. When the First Plan was presented, a capital-output ratio of 3:1 was assumed for the economy as a whole; it actually turned out to be 1.8:1. The bias of both the economy and the Plan in favor of agriculture—a sector in which better but simple tools, combined with improved methods and attitudes in cultivation, yield substantial returns—and the sizable nonmonetary investment in the rural economy which takes place all the time but is not included in Plan estimates of investment,[7] are two factors that render the capital-output ratio favorable in India and in other, similarly situated countries, compared with the more generally observed ratios of 3:1 or 4:1 in industrialized countries. During the First Plan period, two additional factors also influenced the outcome: a part of the rise in industrial output was attributable to utilization of the idle capacity available in several industries at the commencement of the Plan, and the succession of good monsoons partly accounted for the record agricultural crops of 1953–54. These were special and temporary factors. Especially if the agricul-

[7] Investment takes place in the rural sector in the form of direct employment of labor and materials in digging wells, constructing small farm houses and storage facilities, and making various improvements. This investment is difficult to estimate, particularly on a net basis. According to data collected by the National Sample Survey in 1950–51, the value of improvements and construction of houses, wells, roads, etc., was Rs 15 per rural household per annum; another Rs 13 was the value of investment in implements and land improvement. On the basis of these data, total investment for all rural households works out at Rs 1.63 billion. A part of this would be monetary investment, though not all could be deemed net investment. On the other hand, since the Survey was made, there have been increased contributions in kind for local works. On the whole, therefore, nonmonetary investment in the rural sector may be placed at over Rs 1 billion, or 1 per cent of national income.

tural sector should not again show a ratio something like 1:1, the shift in the pattern of investment in the Second Plan suggests that the assumption of a 2.3:1 ratio for the whole economy may prove to be somewhat optimistic.

Size and structure of the Plans

The total outlay proposed in the public sector under the First Plan was Rs 23.56 billion; actual outlay was about Rs 19.60 billion. Total outlay in the public sector proposed under the Second Plan is estimated at Rs 48 billion.[8] This does not include direct improvements made by farmers in agriculture or other forms of nonmonetary investment, such as contributions in kind (labor and materials) for executing local development schemes. But in addition to net investment (for building up productive assets), it includes what may be termed current developmental expenditure. Of the actual outlays in the public sector under the First Plan, about Rs 16 billion represented net investment; net investment during the Second Plan period is placed at Rs 38 billion. Total monetary investment during 1951–52 to 1955–56 was approximately Rs 31 billion, divided more or less equally between the public and private sectors; during 1956–57 to 1960–61, it is expected to aggregate Rs 62 billion, of which about 60 per cent would be in the public sector. The distribution of the Plan outlay in the public sector, by categories (Table 6), shows the shift in priorities under the Second Plan, with greater emphasis on industry and transport. The public investment program is concentrated largely on the provision of overhead capital, or the economic infrastructure, such as transport, power and irrigation, and basic industry, which is necessary for further sustained growth in production and cannot be adequately undertaken by the private sector. The proposed Plan outlay of Rs 48 billion in the public sector under the Second Plan is divided between investment and current outlay as shown in Table 7.

For industry and mining, the outlay proposed under the Second Plan is eight or nine times the actual outlay of the First Plan. The development of coal resources is assigned a high priority. The target for coal output in 1960 is 60 million tons, an increase of 22 million tons over

[8] In the Plan frame that preceded, and formed the basis for formulating, the Second Plan, total outlay was placed at Rs 43 billion and was allocated as follows: industry and mining 26 per cent, transport and communications 22 per cent, agriculture and irrigation (including rural development) 22 per cent, construction and social services 17 per cent, electricity 11 per cent, and miscellaneous 2 per cent. The investment portion of the total was placed at Rs 34 billion. The objectives were a growth of 5 per cent per annum in national income and the creation of new employment for 11 million persons.

TABLE 6. DISTRIBUTION OF INDIA'S PLAN OUTLAY IN THE PUBLIC SECTOR, BY CATEGORIES

	First Five Year Plan		Second Five Year Plan		Percentage Increase of Col. (3) over Col. (1) (5)
	Total provision (*million rupees*) (1)	Percentage distribution (2)	Total provision (*million rupees*) (3)	Percentage distribution (4)	
Agriculture and community development	**3,570**	**15.1**	**5,680**	**11.8**	**59.1**
Agriculture	2,410	10.2	3,410	7.1	
Agricultural programs	*1,970*	*8.3*	*1,700*	*3.5*	
Animal husbandry	*220*	*1.0*	*560*	*1.1*	
Forestry	*100*	*0.4*	*470*	*1.0*	
Fisheries	*40*	*0.2*	*120*	*0.3*	
Cooperation	*70*	*0.3*	*470*	*1.0*	
Miscellaneous	*10*	—	*90*	*0.2*	
National extension and community projects	900	3.8	2,000	4.1	
Other programs	260	1.1	270	0.6	
Village panchayats	*110*	*0.5*	*120*	*0.3*	
Local development works	*150*	*0.6*	*150*	*0.3*	
Irrigation and power	**6,610**	**28.1**	**9,130**	**19.0**	**38.1**
Irrigation	3,840	16.3	3,810	7.9	
Power	2,600	11.1	4,270	8.9	
Flood control and other projects, investigations, etc.	170	0.7	1,050	2.2	
Industry and mining	**1,790**	**7.6**	**8,900**	**18.5**	**397.2**
Large and medium-sized industries	1,480	6.3	6,170	12.9	
Mineral development	10	—	730	1.5	
Village and small industries	300	1.3	2,000	4.1	
Transport and communications	**5,570**	**23.6**	**13,850**	**28.9**	**148.7**
Railways	2,680	11.4	9,000	18.8	
Roads	1,300	5.5	2,460	5.1	
Road transport	120	0.5	170	0.4	
Ports and harbors	340	1.4	450	0.9	
Shipping	260	1.1	480	1.0	
Inland water transport	—	—	30	0.1	
Civil air transport	240	1.0	430	0.9	
Other transport	30	0.1	70	0.1	
Post and telegraph	500	2.2	630	1.3	
Other communications	50	0.2	40	0.1	
Broadcasting	50	0.2	90	0.2	
Social services	**5,330**	**22.6**	**9,450**	**19.7**	**77.3**
Education	1,640	7.0	3,070	6.4	
Health	1,400	5.9	2,740	5.7	
Housing	490	2.1	1,200	2.5	
Welfare of backward classes	320	1.3	910	1.9	
Social welfare	50	0.2	290	0.6	
Labor and labor welfare	70	0.3	290	0.6	
Rehabilitation	1,360	5.8	900	1.9	
Social schemes relating to educated unemployed	—	—	50	0.1	
Miscellaneous	**690**	**3.0**	**990**	**2.1**	**43.5**
Total	**23,560**	**100.0**	**48,000**	**100.0**	

Sources: Planning Commission, *Second Five Year Plan* (New Delhi, 1956), and *Review of the First Five Year Plan* (New Delhi, 1957).

TABLE 7. DISTRIBUTION OF INVESTMENT AND CURRENT OUTLAY IN THE PUBLIC SECTOR UNDER INDIA'S SECOND FIVE YEAR PLAN

(In billions of rupees)

	Investment	Current Outlay	Total
Agriculture and community development	3.38	2.30	5.68
Irrigation and power	8.63	0.50	9.13
Industry and mining	7.90	1.00	8.90
Transport and communications	13.35	0.50	13.85
Social services	4.55	4.90	9.45
Miscellaneous	0.19	0.80	0.99
Total	38.00	10.00	48.00

Source: Planning Commission, *Second Five Year Plan* (New Delhi, 1956).

1955, of which 12 million tons is to be from collieries in the public sector. The industrial priorities laid down in the Second Plan (for both public and private sectors) are increased production of iron and steel and of heavy chemicals; development of heavy engineering and machine-building industries; expansion of capacity in respect of other producer goods; modernization and re-equipment of existing large-scale industries, such as cotton and jute textiles and sugar; fuller utilization of existing capacity; expansion of capacity for consumer goods, with the requirements of common production programs and the production targets for the decentralized sector of industry being kept in view. The expansion of the steel industry has the highest priority, and heavy engineering industries (including structural fabrication and machine tools) have a priority second only to steel. Three new steel plants, each with a finished steel capacity of about 0.7–0.8 million tons and costing in all Rs 3.5 billion (since revised to Rs 5 billion), are to be set up in the public sector; simultaneously, the existing steel mills in the private sector are to be expanded.[9]

The figures on proposed investment in large-scale industries (Table 8) indicate that the private sector has an equal share with the public sector, that public sector investment is confined largely to heavy and basic industries, but that even there the private sector has no small part.

[9] A steel plant being built at Rourkela with technical assistance from the Federal Republic of Germany is expected to go into full production by 1959 and to turn out 720,000 tons of finished flat products annually. A plant at Bhilai is being aided by the U.S.S.R.; the Russians have agreed to supply equipment on credit, repayable in 12 years from completion of the work, at 2½ per cent. The estimated output is 770,000 tons of heavy and medium products, and the completion date is the end of 1959. A plant at Durgapur has U.K. backing, financial and technical, and originated in a Colombo Plan survey; this is the largest contract ever placed with a British company. Output is estimated at 790,000 tons of medium and light steel sections. The expansion of the Tata Iron and Steel Com-

TABLE 8. PROPOSED INVESTMENT IN LARGE-SCALE INDUSTRIES UNDER INDIA'S SECOND FIVE YEAR PLAN

(In billions of rupees)

	Public Sector[1]	Private Sector	Total
Industrial machinery and capital goods	0.84	0.72	1.56
Other producer goods	4.63	2.96	7.59
Consumer goods	0.12	1.67	1.79
Total	5.59	5.35	10.94

Source: Planning Commission, *Second Five Year Plan* (New Delhi, 1956).
[1] Including new investments of the National Industrial Development Corporation.

Partly because of the distribution of raw materials and other resources, organized industry in India is unevenly dispersed. On the basis of employment figures, it may be stated broadly that 25–30 per cent of aggregate industrial activity is concentrated in the State of Bombay, over 20 per cent in the State of Bengal, and 10–12 per cent in the State of Madras; the other 40 per cent is distributed over the rest of the country, which accounts for 67 per cent of the population and 78 per cent of the area. The program of industrialization envisages more balanced regional development. This is being assisted through such devices as uniform prices of steel, pig iron, and cement at all railheads, made possible by freight pool arrangements, and the establishment of industrial estates which enable medium-sized and small-scale industrial units to have the advantages of common services and facilities. The increasing availability of hydroelectric power for industrial purposes also makes the dispersion of industry easier. The proposed large-scale development of lignite deposits in South India is another important project for the same purpose.

The allocation of capital for transport and communications has been increased from 24 per cent of the total in the First Plan to 29 per cent in the Second; in both Plans, railways account for the larger part of this allocation, i.e., 11 per cent of the total in the First Plan and 19 per cent in the Second. The Indian railway system is the fourth largest in the world, comprising nearly 36,000 route miles. The railway program under the First Plan was carried out as scheduled, but at the end of the Plan period there were still arrears of replacement; of a total

pany commenced in 1953. In 1955 an agreement was concluded with the Kaiser organization in the United States for technical assistance in a plan to raise annual output to a total of 2 million ingot tons by 1958; loans from the International Bank for Reconstruction and Development provide a main source of financing. The Indian Iron and Steel Company has placed orders in the Federal Republic of Germany and the United Kingdom, with a view to stepping up output to 800,000 tons of ingot steel and 400,000 tons of pig iron; it also is aided by the IBRD.

stock on the line in 1956 of 9,260 locomotives, 24,780 coaches, and 266,000 wagons, as many as 2,810 locomotives, 6,300 coaches, and 49,570 wagons were over age. Of the broad gauge stock in 1956, 32 per cent of the locomotives and 16.5 per cent of the wagons were over age, and these percentages were higher than in 1951. After taking into account the physical targets set in agriculture and industry, particularly in regard to coal and steel, additional goods traffic originating during the Second Plan period is estimated at over 60 million tons, raising the total goods traffic to be handled by 1960–61 to 181 million tons; but, in view of the limited resources that are available, provision is made in the Plan for additional carrying capacity of only 42 million tons. The cost of the net investment program of the railways is placed at Rs 9 billion, of which the railways themselves are expected to provide Rs 1.50 billion. Including the rehabilitation costs (Rs 2.25 billion) to be met from railway earnings, the total railway program is placed at Rs 11.25 billion, of which Rs 4.25 billion is the estimated foreign exchange component.

While the outlay on agriculture and irrigation, like that on every other category, is larger under the Second Plan, its share in the total has been reduced from 26.5 per cent in the First Plan to 15.0 per cent in the Second Plan. In the Plan frame, it may be recalled, emphasis was placed almost exclusively on rapid industrialization, particularly on the development of basic industries. The final version of the Plan stresses also the rebuilding of rural India, which is not, however, correspondingly reflected in the allocations. Agricultural targets have been revised since the Plan was formulated; aggregate agricultural output is to show a 27 per cent rise, and foodgrain production a rise of 24 per cent, against 18 per cent and 16 per cent, respectively, envisaged in the Plan estimates. However, these increases are to be effected within the original financial allocation, through greater use of manures and fertilizers, widespread distribution of quality seed, extension of the Japanese method of paddy cultivation—on the whole, through improved techniques and better irrigation facilities. For instance, the Japanese method of rice cultivation is to be extended considerably, to cover over 8 million acres by 1960.[10] If the rising demand resulting from development expenditures, especially from rapid industrialization, is not to lead to inflationary conditions, such an increase in food supplies is essential. But it is doubtful that these enlarged output targets can be attained in the agricultural sector under the present scheme of allocation. To some extent, their attainment may be rendered possible

[10] In the agricultural year 1956–57, about 2.4 million acres were brought under the Japanese method of cultivation.

by the fact that industrialization itself gradually changes the technical coefficients in agriculture.

Progress under First Plan and output targets under Second Plan

Of the actual development outlay of Rs 19.60 billion under the First Plan, 15 per cent was spent on agriculture and community development, 29 per cent on irrigation and power, 5 per cent on industry and mining, 27 per cent on transport and communications, 21 per cent on social services, and 3 per cent for other purposes. The resources pattern for this outlay was as follows: revenue surpluses and internal borrowing Rs 12.6 billion (taxation and surpluses of railways Rs 7.51 billion, market loans Rs 2.05 billion, small savings and other unfunded debt Rs 3.04 billion), external assistance Rs 1.9 billion, other capital receipts Rs 0.9 billion, and deficit finance Rs 4.2 billion. The over-all result of a rise of 18 per cent in national product, or a growth rate of 3.4 per cent per annum, has already been mentioned; the rise in 1953–54 was as high as 6 per cent, mainly because of good agricultural crops; in 1955–56 the increase was less than 2 per cent. The outlays on the development of economic overhead proposed in the First Plan were modest; in physical terms, actual achievement was 85–90 per cent of the targets postulated.

The general index of industrial production (1951=100) increased steadily to 104 in 1952, 106 in 1953, 113 in 1954, 122 in 1955, and 133 in 1956; the rise in industrial output during the five years of the Plan was about 30 per cent. On the basis of data available for January–November, the industrial index appears to have risen in 1957 by about 3 per cent. The general index of agricultural production rose by 20 per cent during the First Plan period; the index (1949–50=100) fell to 95.6 in 1950–51, rose moderately in the next two years, increased sharply to 114 in 1953–54, and in the next two years showed only a small increase to 116. However, total production of foodgrains, which had reached the record level of 68.7 million tons in 1953–54, declined in the following two years. But in 1956–57, a good crop year, foodgrain production rose again to 68.7 million tons, and the general index of agricultural production was 123. Because of drought conditions in certain parts of the country, a shortfall is expected in 1957–58, particularly in production of rice.

For the public and private sectors taken together, actual gains in output of some of the more important products under the First Plan (compared with original targets), and the targets of output to be attained by 1960–61, under the Second Plan, are shown in Table 9. Since the Second Plan was formulated, the targets for certain agricultural

TABLE 9. MAIN TARGETS OF PRODUCTION AND DEVELOPMENT IN INDIA UNDER THE FIVE YEAR PLANS

	1950–51[1]	1955–56		1960–61, Second Plan Target	Percentage Increase in 1960–61 over 1955–56
		First Plan estimate[1]	Actual		
Agriculture					
Foodgrains (million tons)	54.0[2]	61.6	65.0	75.0	15
Cotton (million bales)	2.9	4.2	4.0	5.5	38
Sugar cane–raw gur (million tons)	5.6	6.3	5.9	7.1	20
Oilseeds (million tons)	5.1	5.5	5.7	7.0	23
Jute (million bales)	3.3	5.4	4.2	5.0	20
Tea (million pounds)	607	....	665	700	5
National extension blocks (number)	0	....	788	3,800	380
Community development blocks (number)	0	....	372	1,120	200
Irrigation and power					
Area irrigated (million acres)	51	71	65	88	32
Electricity, installed capacity (million kw.)	2.3	3.6	3.4	6.9	103
Minerals					
Iron ore (million tons)	3.0	....	4.7[3]	12.5	165
Coal (million tons)[3]	32.3	....	38.2	60.0	58
Large-scale industries					
Finished steel (million tons)	1.1	1.4	1.3	4.3	231
Aluminum (thousand tons)	3.7	12.0	7.4	25.0	238
Automobiles (number)	16,500	30,000	25,000	57,000	128
Railway locomotives (number)	3	173	179	400	124
Cement (million tons)	2.7	4.8	4.6	13	183
Fertilizers					
Nitrogenous, in terms of ammonium sulphate (thousand tons)	46	450	394	1,450	267
Phosphatic, in terms of superphosphate (thousand tons)	55	180	72	720	900
Cotton textiles (million yards)[4]	4,618	6,400	6,550	8,500	30
Sugar (million tons)	1.1	1.5	1.9	2.3	21
Paper and paper board (thousand tons)	114	200	187	350	87
Sulphuric acid (thousand tons)	99	200	165	470	185
Petroleum refining, in terms of crude processed (million tons)	....	3.5[5]	3.6	4.3	19
Bicycles (thousand)	101	530	513	1,000	95
Transport and communications					
Railways					
Passenger train miles (million)	95	....	108	124	15
Freight carried (million tons)	91	....	120	181	51
Roads					
National highways (thousand miles)	12.3	12.9	12.9	13.8	7
Surfaced roads (thousand miles)	97.5	....	121.6	125.0	3
Post offices (thousand)	36	....	55	75	36
Education and health					
Elementary and basic schools (thousand)	223	....	296	350	19
Teachers in primary and middle/secondary schools (million)	0.74	....	1.03	1.34	30
Medical institutions (thousand)	8.6	9.6	10	12.6	26
Hospital beds (thousands)	113	125	140[6]	155	11

Sources: Planning Commission, *The First Year Plan, Second Five Year Plan,* and *Review of the First Five Year Plan* (New Delhi, 1952, 1956, and 1957).

[1] Dots indicate that data are not available.

[2] Relates to the year 1949–50.

[3] Figures relate to calendar years.

[4] Includes handloom cloth.

[5] Rated capacity to be reached by 1956–57 when the two new refineries were expected to be in full operation.

[6] Approximate; the figure for 1954–55 was 136,000.

commodities have been revised upward. For foodgrains, the new target is 80.5 million tons, an increase of 24 per cent over output in 1955–56; for cotton, 6.5 million bales; and for jute, 5.5 million bales. For all commodities, the revised target indicates an increase of 27 per cent, instead of the original 18 per cent, over 1955–56 output. In November 1957, however, the Foodgrains Enquiry Committee stated that the record at that time suggested that actual achievement might be only 67 per cent of the revised targets, and recommended continued imports of foodgrains on the substantial scale of 2–3 million tons a year. In these circumstances, the expansion of food production obviously has a high priority and the Indian authorities are giving considerable attention to this problem.

Investment in the private sector

The industrial investment program in the private sector for the period of the Second Plan is estimated on the basis of the schemes formulated for the main categories of private industry. The estimates for construction, agriculture, and rural industries are only broad approximations. A sizable increase in stocks is to be expected, especially with the growth in industrial activity, and substantial provision is therefore made for investment in working capital. Residential construction is included in investment, but only in the urban sector, as rural housing falls largely in the nonmonetary sector. The probable level of net investment in the private sector during the period 1956–57 to 1960–61 is placed at Rs 24 billion; this includes organized industry and mining, Rs 5.75 billion; construction, Rs 10 billion; plantations, electricity, and transport, Rs 1.25 billion; agriculture and small-scale rural industries, Rs 3 billion; and stocks, Rs 4 billion.

It is difficult to enumerate all the sources of savings for the private sector, since only a part of the total savings utilized in this sector passes through institutional agencies, and savings which may be termed "direct," i.e., savings of the persons undertaking the investment or the savings of their friends and relatives, play a prominent part. However, if certain assumptions are made, an estimate is possible of the resources for the organized sector of private industry. In view of the fairly high rate of investment already achieved in organized industries and the increasing strength of the capital market, it should not be difficult to raise the resources required for fixed investment. The Government can assist in the fulfillment of the programs in this sector partly by eliminating unplanned investment through control of capital issues and licensing of industries, and partly through tax concessions and adjust-

ments and financial assistance through the corporations set up for the purpose.

A total outlay of Rs 7.20 billion is envisaged for industrial development in the private sector (including the National Industrial Development Corporation program and excluding mining, electricity generation and distribution, plantations, and small-scale industries); this total includes Rs 5.70 billion for new investments and Rs 1.50 billion for replacements and modernization. After the exclusion of Rs 550 million to be provided by the National Industrial Development Corporation, financial requirements amount to Rs 6.65 billion; estimates of resources available for the private sector amount to Rs 6.20 billion (Table 10).

TABLE 10. ESTIMATES OF RESOURCES AVAILABLE FOR INDUSTRIAL DEVELOPMENT IN THE PRIVATE SECTOR UNDER INDIA'S FIVE YEAR PLANS

(*In millions of rupees*)

	1951–56	1956–61
Loans from Industrial Finance Corporation, State Finance Corporations, and Industrial Credit and Investment Corporation	180	400
Direct and indirect loans from governments, Central and State participation	260	200
Foreign capital, including suppliers' credit	420–450	1,000
New issues	400	800
Internal resources (for new investment and replacements)	1,500	3,000
Other sources, such as advances from managing agents, excess profits tax refunds, etc.	610–640	800
Total	3,400	6,200

Source: Planning Commission, *Second Five Year Plan* (New Delhi, 1956).

REVISED COSTS OF THE PLAN

While no precise revision of the financial costs of the Plan has been made, and no official estimate of the total outlay involved is available, it became evident during 1957 that the total cost of the Plan in the public sector was likely to exceed Rs 55 billion, if the physical targets postulated under the Plan were to be realized. The main items for which costs will particularly exceed the original estimates are railways, the three steel plants, other industries, power schemes, and other projects in respect of which the import content is large. If current trends in production are maintained and transport is not to become a serious bottleneck, additional freight-carrying capacity of 60 million tons is the minimum that has to be provided for; the actual allocation for railway development would secure a smaller addition than this. The cost of adding further to freight capacity is placed at over Rs 1 billion, while the general increase in costs amounts to another Rs 1 billion. Even at the time the Plan was finalized, the inadequacy of allocations for transport in relation to production targets was underlined. The

revised estimate of the total cost of the steel plants (including the cost of townships and training programs) is reported to be Rs 4.95 billion, against an original provision of Rs 3.50 billion, which itself was an underestimate to the extent of Rs 500 million. Of the rise in the total costs of the Plan, a large part reflects the increases in foreign exchange requirements. The main factors responsible for the substantial rise are that the original cost figures, particularly in respect of major schemes like steel plants and power and irrigation projects, have proved to be underestimates; and prices in general, and particularly of imports of capital goods and intermediate goods, have risen. Some physical additions have been made to the Plan by enlarging schemes already accepted, with a view to making them more rounded, or by including new schemes like heavy machine-building; such increases have, however, been few and are only a contributing factor to the increases in costs.

Estimates for financing the Plan

According to the original estimates for financing the Plan, shown in Table 11, the budgetary resources to be raised through taxation, borrowing, and other receipts amounted to Rs 28.0 billion; this includes the gap of Rs 4 billion which, it was decided, should be met mostly by additional taxation. The estimate of the surplus of ordinary revenues over expenditures outside the Plan is based on the assumption that total revenue maintains a uniform proportion to a rising national income; however, this cannot be expected to happen automatically. As the Taxation Enquiry Commission observed, it has been the experience

Table 11. Original Estimates for Financing India's Second Five Year Plan

(*In billions of rupees*)

	Amount
Surplus from current revenues	8.0
At 1955–56 rates of taxation	*3.5*
Additional taxation	*4.5*
Borrowing from public	12.0
Market loans	*7.0*
Small savings	*5.0*
Other budgetary sources	4.0
Railways' contribution to development program	*1.5*
Provident funds and other deposits	*2.5*
Resources to be raised externally	8.0
Deficit financing	12.0
Gap, to be covered by additional measures to raise domestic resources	4.0
Total	48.0

Source: Planning Commission, *Second Five Year Plan* (New Delhi, 1956).

for years that additional tax effort on the part of the Central and State Governments has been necessary merely to maintain the ratio of public revenue to national income. The ratio of tax revenue to national income in India has remained virtually stationary at about 7.5 per cent until recently. This is because collections from certain taxes (e.g., taxes on land and specific indirect taxes) have remained rather inelastic; there is a lag between the rise in incomes (in real or money terms) and the consequent rise in tax yields, even of direct taxes related to income; and there is leakage of part of the revenue through evasion. The far-reaching tax changes in 1956 and 1957 have resulted in an increase in the ratio of tax revenue to national income from 7.4 per cent in 1955–56 to an estimated 8.3 per cent in 1957–58. The ratio of total public revenue to national income rose from 9.7 per cent to an estimated 10.7 per cent. Moreover, in estimating the current surplus, provision was made for only minimum increases in expenditures under nondevelopment headings, such as defense and administration; revised estimates for 1957–58 and budget estimates for 1958–59 show sizable increases in non-Plan expenditures. Administrative costs, including the costs of reorganizing the States broadly on a linguistic basis, as well as expenditure on relief and rehabilitation of displaced persons coming into West Bengal from East Pakistan, have been higher than expected. Defense costs, as noted earlier, have risen; the rise of Rs 600 million in the defense budget in 1957–58 and of another Rs 120 million in 1958–59 would correspond to a total addition of Rs 2.8 billion to non-Plan expenditure over the Plan period. Thus, at 1955–56 rates of taxation, the current revenue surplus available for Plan expenditures would be considerably less than was estimated.

FRESH TAXATION

In estimating the yield from additional taxation at Rs 4.5 billion (Table 11), the recommendations of the Taxation Enquiry Commission were taken into account, and it was assumed that steps would be taken to implement them as expeditiously as possible; the Central and State Governments were expected to raise this sum between them in equal amounts. Keeping in view the objective that "the maximum practicable rate of investment in the public sector should be attained, consistent with maintaining and strengthening the incentives to the private sector to step up its own rate of investment," the Taxation Enquiry Commission had made detailed recommendations in the central, state, and local spheres of taxation which involved a deepening and widening of the tax system, as well as certain incentive tax reliefs. Broadly, their conclusion was that a substantial increase in total tax revenue was both necessary and feasible, mainly through higher excise

duties, a net increase in income taxation, surcharges on land revenue, betterment levies, and wider coverage of sales taxation. With a view to covering the financial requirements of the Second Plan, which are much larger than was assumed by the Taxation Enquiry Commission, and to avoiding the dangers of excessive deficit financing, the target for additional taxation in the Plan estimates was in fact raised to Rs 8.5 billion, so as to cover the gap of Rs 4 billion also. Taxation has to be supplemented by other devices, such as appropriate pricing policies for certain public enterprises or fiscal monopolies and economies in both Plan and non-Plan expenditures. But it is unlikely that any substantial resources can be obtained from these other sources.

The low ratio of taxation to national product in India is an indicator of both the difficulties and the possibilities of tax increases. Despite the low per capita income in the agricultural sector, a significant contribution to any development program must come from agriculture, which accounts for over 45 per cent of the national product, and indeed generally from the lower income groups. Such imposts become more acceptable when the higher income groups and propertied classes are required at the same time to assume a large share of the increased tax burden. Such additional taxation reduces the scale of deficit financing. It is necessary, therefore, to step up taxation to the limits of tolerance. In adopting such a positive role for taxation, the basis of policy in a country such as India, with a federal government structure, has to be laid by the federal government. It therefore devolves mainly on the Central Government to give effect to taxation policy, although some adaptation by the state and local governments is also necessary. Of the tax measures taken in 1956, the reintroduction of the capital gains tax and an increase in the excise duty on cloth were the most important. In 1957, far-reaching tax changes were made, estimated to yield over Rs 1 billion a year and Rs 880 million in fiscal 1957–58. For the whole Plan period, the aggregate revenue from the tax changes made in 1956 and 1957 may be placed at about Rs 8.0–8.5 billion. Together with the normal increase in revenue as incomes rise, the tax effort expected of the States, and further taxation that may be levied by the Centre, total revenue surpluses available for Plan purposes may be placed at about Rs 13 billion.

The substantial tax changes introduced in 1957 cover both direct and indirect taxes under almost every major heading, and include two new levies—on wealth and on expenditure. In announcing these changes, the Finance Minister said that he was in effect outlining the tax structure for the period of the Second Plan, and that for the rest of the period there would be only relatively small adjustments. Certain structural changes have been made in the direct tax sector which are

expected, in the course of time, to make possible a progressive increase in the ratio of public revenue to national income. The Finance Minister stated that the main objectives of tax policy are a sizable addition to public revenue, provision of incentives for higher earnings and savings, restraint of consumption over a fairly wide field so as to keep domestic inflationary pressures in check and release larger resources for investment, and initiation of such changes in the tax structure as would render tax receipts increasingly responsive to rising incomes. The tax changes proposed for 1958–59 are modest and include the levy of a gift tax, reduction in the excise duty on cotton textiles, abolition of the company compulsory deposits scheme, and exemption of foreign nationals residing in India from payment of the wealth tax on their foreign assets. Thus, the major reorientation of the tax structure that was effected in 1956 and 1957 remains. When taxation is thus decisively stepped up, and the tax net is widened to cover sectors which hitherto have not been reached or have been only lightly affected, and when new levies related to the valuation of assets on a current basis and scrutiny of savings in all forms are introduced, administration becomes the crux of the effectiveness of the tax system, especially as the personnel resources of the machinery for assessing and collecting taxes are already under strain. While there are administrative and other problems both in operating the new taxes and in effectively enforcing the old taxes whose incidence has been substantially increased, this major tax effort reflects the determination of the Indian authorities to subdue the emerging inflationary pressures in the economy and to raise resources for the Plan.

Loans and Small Savings

The estimate of Rs 7 billion for loans from the public implies that average annual receipts from this source will be about 40 per cent higher than they have been recently. Especially in the context of the brisk demand for funds in the private sector, the task of mobilizing a net amount of Rs 7 billion (i.e., allowing for loans of Rs 4.30 billion due for repayment) cannot be regarded as easy. A substantial increase in small savings will also be required if the target of Rs 1 billion a year is to be realized. On the whole, on all the available evidence, it seems prudent not to revise upward the original Plan estimates of borrowing; in fact, there may be a shortfall.

A steady improvement in domestic savings in recent years is shown by the experience of new private issues in the capital market and of government loans. The total of new private issues, in which are included all issues of not less than Rs 10 million, amounted to Rs 200 million in the period July 1955–June 1956, compared with Rs 170 million in July

1954–June 1955 and much less in earlier years; the total in 1956–57 seems to have been still larger, about Rs 400 million. For government borrowings, on the whole, there has been an even greater improvement in net receipts. Planned development has itself established a direct and meaningful link between government borrowings and public investments; fuller coordination has been developed between central and state borrowing programs, in timing as well as in the terms offered; with the subsidence of inflationary conditions and restoration of stability in the money and capital markets, confidence has increasingly revived. For the five years 1946–47 to 1950–51, net repayment of government loans amounted to Rs 210 million. During 1951–52 to 1955–56, net receipts amounted to Rs 1.77 billion. These figures do not accurately measure the improvement, for there was a net repayment of Rs 250 million in 1951–52 and a net receipt of only Rs 130 million in 1952–53. In 1953–54 there was a small net repayment, while in 1954–55 net receipts were Rs 1.11 billion and in 1955–56, Rs 820 million. With adjustments for transactions in the investment accounts of the Reserve Bank of India and of Central and State Governments, the net absorption of securities by the market during this period was even larger, Rs 2.5 billion. The prospect for market loans in the Second Plan period was viewed in the light of this improvement.

Net borrowing by the Central and State Governments of Rs 1.41 billion was apparently equal in 1956–57 to the average expected for the Plan period. However, when allowance is made for the amount taken up by the Reserve Bank of India, there was little rise in 1956–57 over the last two years of the First Plan, despite the entry of as many as 15 State Governments into the market and a reorientation of the Central Government's borrowing techniques, whereby three loans of differing maturities were bunched together to meet different investor preferences. The budget estimate of net market borrowings by the Central Government in 1957–58 was Rs 680 million. Two loans for a total of Rs 1 billion were first issued: 3¾ per cent National Plan Bonds, Fourth Series, with an issue price of Rs 99.50, and repayable at par on August 1, 1967; and a 4 per cent Loan 1972, issued at Rs 100, and repayable at par on August 1, 1972. Subscriptions were received either in cash or by converting the 3 per cent Victory Loan repayable in 1957, or the 3 per cent Loan repayable in 1958. Total subscriptions amounted to Rs 1.06 billion, including conversions of Rs 0.45 billion. Another loan of Rs 300 million, in 3¼ per cent bonds, 1962, was issued in December 1957. State Governments were dissuaded from entering the market in 1957–58; only two State Governments issued loans, for a total of Rs 90 million. For 1957–58, actual cash subscriptions to central and state loans amounted to Rs 770 million, which was much

less than was estimated in the Plan. This was in part the result of stringency in the capital market and the competitive demands from the private sector for investible funds.

The target for small savings under the Second Plan is Rs 5 billion for the five-year period. Net small savings collections in 1956–57, at Rs 594 million, were somewhat less than in 1955–56. The budget estimate for small savings for 1957–58 was Rs 800 million; however, actual collections for the eleven months April 1957–February 1958, at Rs 446 million, were less than the amount collected in the corresponding period of 1956–57. With a view to augmenting receipts, interest rates on the various categories of small savings have been raised by ½–¾ per cent. The State Governments have been allotted a larger share of the receipts from small savings (two thirds, against one half previously), in order to induce them to organize the collection of these savings more efficiently.

Other Budgetary Sources

The railways were expected to contribute Rs 1.50 billion to the financing of the Rs 9 billion provided for them under the Plan outlay (see Table 6); this was to be done partly through selective rate adjustments and partly from the larger earnings expected from the growth in traffic. In addition, the railways have to provide in the Plan period Rs 2.25 billion for depreciation. In the railway budget for 1957–58, freight rates were revised upward, to yield Rs 95 million in 1957–58 and more in later years. The contribution of the railways is now placed at Rs 900 million more than in the original estimates. Together with other nontax items, provident funds, etc., the total from sources other than taxation may be estimated at about Rs 5 billion.

External finance

The foreign exchange requirements of the Second Plan are considerable. The emphasis placed on heavy industry and transport means large imports of capital goods, especially in the initial Plan years, i.e., until steel, machinery, and structural fabrication industries are developed in India. The import component of investments in irrigation, electric power generation, industry, railways, and communications would be of the order of 40 per cent of the total. Increased agricultural production helps to save foreign exchange by limiting, and in due course altogether eliminating, food imports. The growth of industry helps to save foreign exchange by substituting domestic production for some imports, and it also increases foreign exchange earnings through

a larger volume of more diversified exports. In particular fields of industry, production targets are formulated specifically with a view to stepping up exports. The main export targets to be reached by 1960–61 are as follows: cotton textiles (cloth), 1,000–1,100 million yards; jute manufactures, 900,000 tons; ferromanganese, 100,000 tons; bicycles, 150,000; vegetable oils, 240,000 tons; salt, 300,000 tons; and iron ore, 2 million tons. A few of these are new export lines; others represent sizable increases over the export levels reached in 1955.

It is extremely difficult to forecast foreign exchange requirements and earnings over a period of five years. Broadly speaking, on certain assumptions (viz., in particular, that average terms of trade in the Plan period will remain as they were in 1955–56 and that inflationary pressures will be held in check), it was estimated that during the Second Plan period there would be an aggregate balance of payments deficit on current account of about Rs 11 billion. It was proposed to cover a part of the deficit by drawing Rs 2 billion from India's sterling balances. The remaining Rs 9 billion was to be obtained by borrowing from the International Bank for Reconstruction and Development, loans and grants from other international institutions, loans and grants from foreign governments, flotation of loans in foreign markets, or through private foreign investment. An inflow of private foreign capital of the order of Rs 1 billion was assumed for the investment programs in the private sector. For the public sector, therefore, receipts of Rs 8 billion from external resources were assumed.

The balance of payments on current account for the five-year period, as estimated in the Plan document, is shown in Table 12. Annual average imports of machinery, vehicles, and steel and other metals during

TABLE 12. ESTIMATES OF INDIA'S BALANCE OF PAYMENTS ON CURRENT ACCOUNT DURING PERIOD OF SECOND FIVE YEAR PLAN

(In billions of rupees)

	First Plan: Actual Annual Average, 1951–52 to 1955–56	Estimates for Second Plan Period						
		1956–57	1957–58	1958–59	1959–60	1960–61	Average for 5 years	Total for 5 years
Exports f.o.b.	6.22	5.73	5.83	5.92	6.02	6.15	5.93	29.65
Imports c.i.f.	7.25	7.83	8.86	9.90	8.95	7.86	8.68	43.40
Balance	−1.03	−2.10	−3.03	−3.98	−2.93	−1.71	−2.75	−13.75
Net invisibles[1]	+0.78	+0.62	+0.55	+0.51	+0.46	+0.41	+0.51	+2.55
Total	−0.25	−1.48	−2.48	−3.47	−2.47	−1.30	−2.24	−11.20

Sources: Reserve Bank of India, *India's Balance of Payments, 1948–49 to 1955–56* (Bombay, 1957); Planning Commission, *Second Five Year Plan* (New Delhi, 1956).

[1] Excludes official donations.

1956–61 are estimated at Rs 4.4 billion, against the actual value of Rs 2.25 billion in 1955–56; in effect, these imports account for all of the estimated deficit in the balance of payments on current account during the Second Plan period.

Actually, the current account deficit in 1956–57 amounted to Rs 2.93 billion ($625 million), much larger than had been estimated; and available data indicate that the 1957–58 deficit has been considerably above that in 1956–57. In the First Plan period, when a reduction in exchange reserves of Rs 2.9 billion was expected, the actual decline was Rs 1.2 billion, which was only slightly more than the recorded capital outflow of Rs 1.1 billion. The drawings on sterling balances in 1956–57, the first year in the Second Plan period, were greater than the total drawings of over Rs 2 billion provided for in the Plan for the whole period. The drain on reserves continued in 1957–58. Emergency measures (including drawings of $200 million from the International Monetary Fund in February, March, and June 1957, severe import restrictions, and strict limitations on exchange made available for travel) were taken to conserve foreign exchange resources and to rectify the imbalance to an extent that would make it manageable.

Meanwhile, an effort was also made to promote exports in new lines, such as sugar, by restricting domestic demand, and to increase exports of cotton textiles, iron ore, and other items; a Directorate of Export Promotion was set up, and an export risks insurance corporation was established. On the other side, attention was focused on ways and means to obtain foreign assistance to the maximum possible extent in loans and grants and in suppliers' credits.

The enlarged deficit was due mainly to greatly increased imports; imports in 1956–57 are estimated at Rs 10.77 billion and exports at Rs 6.37 billion, against Rs 7.51 billion and Rs 6.41 billion, respectively, in 1955–56 (Table 13). Although import prices were approximately 4.5 per cent higher in 1956–57 than in 1955–56, the substantial increase in the total value of imports was due mainly to a rise of 18 per cent in volume. According to a report by the Reserve Bank of India, the main increases were in machinery, vehicles, iron and steel, and other metals *(Rs 1,430 million)*; foodgrains, including surplus U.S. foodgrains purchased against rupees (Rs 730 million);[11] oils (Rs 130 million); cutlery, hardware, and electrical goods (Rs 120 million); and chemicals, drugs, and medicines (Rs 90 million). Imports of certain other items, especially government imports, certain raw materials, and some con-

[11] Imports of foodgrains were valued at Rs 1,020 million ($214 million) in 1956–57, compared with Rs 290 million ($61 million) in 1955–56. Imports from the United States under Public Law 480 in 1956–57 amounted to about Rs 430 million ($90 million).

TABLE 13. INDIA'S BALANCE OF PAYMENTS

(*In millions of rupees*)

	1954–55	1955–56	1956–57	April-September 1956	April-September 1957
Imports c.i.f.	–6,838	–7,506	–10,765	–4,768	–6,222
Exports f.o.b.	5,966	6,411	6,370	2,883	2,671[1]
Trade balance	–872	–1,095	–4,395	–1,885	–3,551
Official donations	158	420	398	179	65
Other invisibles, net	774	844	1,072	447	509
Current account, net	60	169	–2,925	–1,259	–2,977
Errors and omissions	–121	–53	–46	106	160
Official loans	6	65	564	79	279
Other capital transactions, net	–117	–31	217	–221	800
Movement in reserves (decrease –)	–172	150	–2,190	–1,295	–1,738

Sources: Reserve Bank of India, *Report on Currency and Finance, 1955–56* and *1956–57*, *India's Balance of Payments, 1948–49 to 1955–56*, and *Bulletin*, October 1957 and January 1958 (Bombay).

[1] Excludes exports of lend-lease silver to the United States, valued at Rs 744 million.

sumer goods, increased by Rs 920 million. On the other hand, imports of raw cotton and raw jute were less in 1956–57 than in 1955–56. In the first half of 1957–58, imports were larger than in the first half of 1956–57; the increase was only on government account.

Exports fell slightly in 1956–57 mainly because of a reduction in volume, since prices were higher than in 1955–56. The fall in export earnings was distributed over a number of commodities. Higher domestic consumption reduced the volume of exports of raw cotton and vegetable oils. There were moderate decreases in exports of cotton textiles, hides and skins, and ores, the former owing mainly to the pressure of home demand and increased Japanese competition in foreign markets. Tea exports, however, increased substantially, and there was a moderate improvement in exports of jute textiles. Tea prices subsequently fell somewhat, while ore exports were affected by transport difficulties. On the other hand, sugar exports have been sizable, and exports of light engineering goods are increasing. The fall in exports in the first half of 1957–58, compared with the first half of 1956–57, was mainly in respect of tea, jute manufactures, and vegetable oils.

The buoyancy of private investment seems to have been as important a factor in stimulating import demand as the rising tempo of development outlays in the public sector. Another factor was the indirect impact of inflationary pressures at home, which increased the demand for imports in general. There were other, somewhat special and temporary, contributory factors, like the impact of the Suez crisis, accelerated use of a larger proportion of import licenses than had been customary, and some stockpiling. Yet another contributory factor

seems to have been the general feeling of confidence on the eve of the Second Plan, generated by the "comfortable" balance of payments position and the rise in reserves since 1952–53, which led to relaxation of import restrictions. On the other hand, there may have been some leakage of exports; there have been reports of increased gold smuggling. The sharp rise in gold prices since 1955, while it reflects internal conditions, encourages such smuggling.

The Indian authorities were concerned with the magnitude of the external payments deficit and the consequent sharp decline in foreign exchange reserves, and they took a number of steps to cope with the situation. A ban was imposed on new foreign exchange commitments in either the private or the public sector in respect of uncommitted projects; import quotas were reduced; the basic allowance of foreign exchange for travel abroad for pleasure was withdrawn; and restrictions were placed on foreign travel for business, education, and health. Import restrictions were tightened progressively, commencing in January 1957, and a virtual ban was placed on imports of nonessentials. The total value of import licenses issued (excluding jute which is licensed on a quantity basis) was only Rs 358 million in the second half of 1957 and Rs 424 million in the first half, compared with Rs 631 million in the second half of 1956. However, because of heavy import commitments that had already been entered into and the large value of licenses outstanding, the full impact of these measures could not be felt during the first nine or ten months of 1957. Expectations of exchange rate adjustments for some European currencies may also have postponed the full impact of these measures until later in the year. Toward the end of 1957, the impact of the stringent import restrictions began to be felt; during November 1957–March 1958, foreign exchange reserves fell at a monthly rate of about Rs 120 million, against a monthly reduction of Rs 270 million during January–October 1957.

The sterling balances of the Reserve Bank of India, which form the principal part of India's foreign exchange holdings, fell from Rs 7.46 billion ($1.57 billion) at the end of March 1956 to Rs 2.98 billion ($630 million) at the end of December 1957; this decrease was twice the amount of the total reduction that had been estimated for the entire Second Plan period. Further withdrawal from sterling balances is inescapable, but the extent of these drawings will depend partly on the scale of foreign assistance forthcoming.

The fall in India's foreign exchange reserves (Table 14) suggested a reconsideration of the question of monetary cover in India. Legal minimum reserve requirements were altered in October 1956—when the Reserve Bank of India Act was amended—from a proportional to

TABLE 14. INDIA'S FOREIGN EXCHANGE RESERVES, AT END OF PERIOD INDICATED

	Assets[1]	Liabilities[2]	Net Assets	Foreign Assets of Reserve Bank	
	Billion rupees			Billion rupees	Billion U.S.dollars
1953 December	9.01	0.92	8.09	7.23	1.52
1954 December	9.05	0.85	8.20	7.31	1.54
1955 December	9.05	0.55	8.50	7.35	1.54
1956 March	9.20	0.81	8.39	7.46	1.57
June	8.60	0.65	7.96	6.82	1.43
September	7.91	0.61	7.30	6.15	1.29
December	7.04	0.59	6.44	5.30	1.11
1957 March	7.01	1.18	5.84	5.27	1.11
June	6.31	1.44	4.87	4.53	0.95
July	5.79	1.43	4.36	4.20	0.88
August	5.64	1.41	4.23	3.80	0.80
September	5.31	1.39	3.92	3.53	0.74
October	5.10	1.37	3.73	3.27	0.69
November	4.96	1.33	3.63	3.09	0.65
December	4.77	1.32	3.45	2.98	0.63
1958 January	....	....	....	2.83	0.59
February	....	....	....	2.80	0.58
March	....	....	....	2.67	0.56

Sources: Reserve Bank of India, *Report on Currency and Finance, 1956–57*, *Bulletin*, June 1956, December 1957, and March 1958, and *Weekly Statistical Supplement to the Bulletin*, April 5, 1958 (Bombay); *International Financial Statistics* (Washington), April 1958.

[1] Includes 7.1 million ounces of gold, valued at Rs 62.50 per tola ($35 per ounce), held by the Reserve Bank of India, foreign assets of the Reserve Bank and authorized dealers, and government balances held abroad.

[2] Includes liabilities of the Reserve Bank and authorized dealers to nonresident official institutions and banks. Data include net borrowing of $188 million (Rs 0.89 billion) from the International Monetary Fund between April 1956 and June 1957.

a fixed basis; a minimum reserve of Rs 4 billion in foreign securities and of Rs 1.15 billion in gold was required to be maintained. However, the minimum of foreign securities could be lowered temporarily to Rs 3 billion with government approval and without legislative amendment; such approval was given in early August 1957. With the continued decline in sterling balances, the foreign securities held in the Issue Department of the Reserve Bank fell to a level which by October 1957 was barely above the Rs 3 billion minimum. On October 31, 1957, the minimum currency cover requirement was reduced to Rs 2 billion ($420 million), of which not less than Rs 1.15 billion should be in gold coin and bullion. Thus, a working balance of not less than Rs 850 million ($178 million) is now required in respect of foreign securities, but this requirement can be suspended for temporary periods with the prior approval of the Central Government.

A consideration even more important than the size of the legally required reserves is the adequacy of foreign exchange reserves for trade purposes, with account being taken not only of seasonal requirements but also of the necessity of providing safeguards against crisis pressures. At the present level, gross short-term foreign assets are equal to

about 40 per cent of annual imports, a level which appears to be adequate. However, in view of the need for emergency food imports which may arise, more than a working balance needs to be maintained. When account is taken of the foreign exchange commitments under the Second Five Year Plan and the recent trends in the reserve position, it is likely that a substantial part of the existing sterling balances will be utilized in the next 12 to 18 months; however, in view of the considerations mentioned above, an attempt may be made later to rebuild reserves to some extent.

The external assistance received during the First Plan period amounted in all to Rs 2.96 billion ($622 million), of which Rs 1.08 billion remained unutilized and was thus available for the Second Plan (Table 15). If all of this sum had been used for the First Plan, there would have been little reduction in sterling balances during the First Plan years. Some carry-over at the end of the Second Plan period has also to be assumed.

The foreign exchange requirements of the Second Plan as revised are placed at about Rs 16–17 billion, against the original estimate of Rs 11 billion. Substantial resources, of the order of Rs 6.1 billion ($1.28 billion), have been authorized by other countries and international institutions since the commencement of the Second Plan, i.e., between April 1956 and March 1958. They comprise credits from the United Kingdom and the U.S.S.R. for steel projects, U.S. Public Law 480 assistance, loans from the IBRD, a second loan from the U.S.S.R. for heavy ma-

TABLE 15. FOREIGN AID RECEIVED BY INDIA DURING PERIOD OF FIRST FIVE YEAR PLAN (PUBLIC SECTOR)

(*In millions of rupees*)

	Authorization	Estimated Use up to March 1956	Balance Carried Over
United States			
Wheat loan	903	903	—
Indo-U.S. aid program			
Grant	1,025	582	443
Loan	393	45	348
Norway: grant	7	3	4
IBRD: loan	125	76	49
Colombo Plan			
Australia: grant	111	51	60
Canada: grant	323	197	126
New Zealand: grant	17	3	14
United Kingdom: grant	4	—	4
Ford Foundation: grant	56	21	35
Total	2,964	1,881	1,083

Source: Planning Commission, *Review of the First Five Year Plan* (New Delhi, 1957).

chinery plant and other schemes, $225 million of aid from the Export-Import Bank of Washington and the U.S. Development Loan Fund, other U.S. assistance, Colombo Plan aid, and credits from Japan, Canada, and other countries. Much the larger part of this assistance directly helps to cover the foreign exchange requirements of the Second Plan projects. The saving from import restrictions, curbs on travel, and other measures adopted since the end of 1956 is estimated to be substantial. If the "core" of the Plan is to be adhered to, most of the cuts affecting capital imports will, indeed, have to be restored; neither can other imports be rigidly restricted to the 1955–56 level. However, credit may be taken for a sizable net saving from import restrictions for the whole Plan period. Some provision may also be made for an inflow of foreign capital into the private sector; this is apart from assistance from the International Bank for Reconstruction and Development and the International Finance Corporation to private enterprises, which is included along with IBRD assistance to projects in the public sector. Thus, utilization of sterling balances, external assistance authorized so far, net saving from import cuts, and inflow of private capital, together provide a substantial part of the exchange requirements. Thus, on the whole, there still appears to be a foreign exchange gap of about Rs 5.5 billion (about $1.15 billion) that remains to be covered. The gap relates almost wholly to the implementation of the "core" of the Plan.

The drawing of $200 million from the IMF is regarded as short-term accommodation (three to five years) and is not included in the estimate of resources. In the First Plan period, apart from the wheat loan, aid from the United States under the Indo-U.S. program amounted to Rs 1.4 billion; assistance from other countries (mostly under the Colombo Plan) was Rs 500 million. On present indications, a substantial increase in U.S. assistance may be expected during the Second Plan period. Some relief has been provided by short-term and medium-term credits made available by other countries. As of February 1958, deferred payment commitments amounted to about Rs 1.35 billion ($284 million) for the public sector and private sector together, including the credit of $158 million from the Federal Republic of Germany for the Rourkela Steel Plant. Repayments on these credits commence from April 1961. The IBRD may be expected to continue to provide important assistance. By the end of 1957 it had already provided assistance amounting to $356 million for both public and private enterprises in India. The railways are the main beneficiary in the public sector; and the iron and steel industry has obtained the main share in the private sector. Other loans have been made for developing electric power and

agriculture, for purchasing passenger aircraft, and for assisting an investment corporation that has been set up to help private enterprise. Another loan program for the development of ports and power projects is under discussion.

Thus viewed, the foreign exchange prospect for the five-year period does not appear bleak, but it is sufficiently difficult to require from the Indian authorities the utmost caution and effort in husbanding foreign exchange resources and using them to maximum advantage. More than internal finance, the availability of foreign exchange is the determinant of the scale of the Plan. The major aspect of the present situation is that considerable import commitments have been made, estimated at Rs 8.64 billion at the end of March 1958, so that a substantial part of the available foreign exchange resources is already earmarked, and 1958–59 also is likely to show a large payments deficit. The (short-term) foreign assistance received so far may pose a difficult problem later; it is estimated at present that repayments will rise from Rs 350 million in 1959–60 to Rs 1.23 billion in 1961–62 and will taper off subsequently. As for the longer term prospect, once production in the new steel plants gets under way, other import-replacing industries are established, and agricultural production again increases, i.e., from about the fourth year of the Plan, some improvement in the situation may be expected. In fact, from 1960, India expects to export some pig iron and steel.

The large wheat loan of 1951 from the United States contributed to the maintenance of stability during the First Plan years. By an agreement signed in August 1956 for the purchase of U.S. agricultural commodities worth $360 million, the United States also undertook to finance, during the period ending June 30, 1959, the sale for Indian rupees of certain agricultural commodities to the Government of India. Wheat, cotton, rice, dairy products, and tobacco are the commodities to be supplied, wheat sales amounting to $200 million and cotton sales to $70 million. In February 1958, it was agreed to substitute wheat for part of the cotton and other supplies. Negotiations have also been initiated to provide additional wheat supplies in exchange for manganese and other minerals. Of the rupee proceeds, India would receive $234.1 million in long-term loans and $54 million by way of grants for economic development. Under the terms of the agreement, part of the loan is to be reloaned to private enterprise as medium-term credit through the Refinance Corporation being set up. To the extent that these supplies are intended to cover the foodgrain imports provided for in the Plan estimates, they are a direct part of the foreign exchange resources for the Plan. The foodgrain import total for the Plan period has been raised from 6 million tons to about 10 million tons; actually,

imports of wheat and rice in the two years 1956–57 and 1957–58 are estimated at 5.7 million tons. Experience in 1956 and 1957 underlines what was only to be expected: that any considerable stepping up of development expenditure means additions to large numbers of small incomes and enhances the demand for and raises the prices of articles of mass consumption, like food and cloth; the pressure will be greater still if deficit financing takes place on a substantial scale. It is for this reason that agricultural targets were revised upward. Under these circumstances, the U.S. supplies of foodgrains have an important role in filling the gap in domestic production and maintaining stable conditions in the economy.

Deficit finance

The Plan document, as well as the budget statements of the Finance Minister, makes it clear that the Indian authorities are aware of the dangers of excessive deficits. The outside limit to deficit financing is placed under the Plan at Rs 12 billion; in assessing its likely impact on the economy, the drawing down of sterling balances must be set against the proposed deficit. The remaining deficit represents the net addition to currency arising from the Government's budgetary operations, which would also result in some secondary expansion of bank credit, though this would be limited by the fact that people in India have a preference for holding currency rather than bank money. In a developing economy, the basic trend of governmental operations is expansionist. With the many contingent demands on resources and the likelihood of shortages arising in such fields as agricultural supplies and foreign exchange, and with deficit financing of this order, the problem of economic policy is that of containing the emerging inflationary pressures by an increase in domestic production, supplemented by imports, and by appropriate fiscal and monetary policies, physical controls, and allocations. This, broadly, is the view of the authorities in India.

In the circumstances prevailing in India, as development proceeds apace and the bounds of the money economy are gradually extended, it would not be a stable, but a somewhat rising, ratio of money to income that would have to be maintained as incomes rose, provided that money was still held mainly for transaction purposes. Any substantial degree of inflation is, however, the very negation of planning in finance; its most damaging effect is on the poorest and most vulnerable sections of the community. It is likely to distort seriously the allocation of resources and, by misdirecting them into speculative and unproductive channels, to frustrate the program of development itself.

There is no way of precisely estimating beforehand the amount of deficit financing which might be deemed useful and which would not result in serious inflation; this is, within limits, a matter of broad judgment.[12] Basically, as long as real resources are available and additional government expenditure is conducive to an increase in productive activity and raises real incomes, deficit financing is useful. But there is a limit beyond which deficit financing begins to impair the economy. The extent to which this limit can be pushed depends on the degree of technical, managerial, and administrative coordination and efficiency that is attained and the measure of popular cooperation and willingness to submit to austerity and discipline that is forthcoming, with a view to maximizing the resources available for investment. The limit is real and has to be kept in view, especially when the process of planning is essentially democratic.

The original Second Plan estimates placed a limit to deficit financing[13] of Rs 12 billion, in a Plan outlay (public sector) of Rs 48 billion, compared with an over-all deficit of Rs 4 billion in an actual Plan outlay of Rs 19.60 billion during 1951–52 to 1955–56. At the time the estimates were prepared, a certain calculated risk could be taken in placing deficit financing fairly high—agricultural and industrial production was rising remarkably, prices actually had been falling until June 1955 and the price rise in the subsequent months was very moderate and could be construed largely as a corrective to the earlier decline, and there was a cushion in sterling balances. By the second half of 1957 circumstances had changed. Even at the time of the original estimates, it was recognized that the position would have to be reviewed from time to time, especially since the deficits were likely to be larger in the initial years, as tax and other resources would take time to develop. The actual over-all deficit in 1956–57 was about Rs 2.0 billion, and the estimated deficit in 1957–58, net of a substantial increase in taxes, is Rs 3.8 billion. In view of recent developments in the economy, especially in prices, the Finance Minister has indicated that total deficit financing during 1956–57 to 1960–61 should be limited to about Rs 9–10 billion. An over-all deficit of Rs 2.0 billion is estimated for 1958–59.

[12] Any attempt to distinguish between development schemes which because they are quick-yielding might properly be financed by deficits, and other schemes would not be practicable. In any case, such demarcation has little validity for a large development program, as it would result in deficit financing on a large scale.

[13] Over-all deficit, comprising borrowing from the central bank and drawing down of cash balances.

Revision of the Plan

When account was taken of the internal resources available through taxation, borrowing, and other sources, it became clear in the second half of 1957 that the deficit finance limit that had been envisaged would be exceeded by a substantial amount. The question therefore arose whether some modification of the original Plan might not be advisable. Any such modification was more likely to be carried out in an orderly way if it was well thought out beforehand. The probability of a shortfall in Plan outlays was also indicated by the progress of the Plan up to that time. The total outlay in 1956–57 was originally estimated at Rs 8.3 billion; revised estimates reduced this figure to Rs 7.6 billion; and the actual outlay was probably about Rs 6.7 billion. Similarly, actual outlay in 1957–58 is likely to be less than Rs 8.5 billion, compared with the original estimate of Rs 9.6 billion. Thus, the actual expenditure during the first two years of the period leaves a very large outlay to be made in the next three years if the total Plan outlay is to be realized. The administrative problems which would arise in organizing these increases might be very difficult. A total Plan outlay of Rs 10.0 billion is proposed for 1958–59.

It has been stated that Indian planning has a long-term perspective into which successive (Five Year) Plans are fitted. If planning is to be a continuous process, subject to change and adjustment as experience is gained, there should be a measure of flexibility within each Plan period itself. The Second Plan, therefore, specifically provides for annual review, and the Plan itself is regarded as a broad framework, in terms of which programs for each year are worked out in detail. Thus, in a period when both external and internal resources are under pressure and an inflationary price upsurge threatens the economy, some rephasing of the Plan, involving deferment of schemes not already undertaken or slowing down the tempo of projects already under construction, would be in order.

There are three problems in the current economic picture of India; the most serious from the viewpoint of the Plan is the substantial decline in external reserves and the gap that has to be bridged in the foreign exchange budget of the Plan. A worsening of the food position and the possibility of a rise in food prices, and a general sluggishness of voluntary savings, are the other two. In view of these trends a certain rephasing of the Plan was difficult to avoid. The Indian authorities have decided to maintain the ceiling of Rs 48 billion, originally envisaged in financial terms for the public sector; this means a curtailment of the Plan in real terms. At the same time, they are determined to carry through in the Plan period what is termed the hard core of the Plan—

steel, coal, transport, and ancillary power projects. Outside this core, outlays would be made only where substantial amounts have already been spent. No new schemes are to be undertaken until provision for those already started is adequate; schemes which save or earn foreign exchange, which use the power, irrigation, and other resources already created and thus bring early returns, or which eliminate the transport bottleneck have been assigned priority.

In making the 1957–58 tax proposals, including the new taxes on expenditure and wealth, the Finance Minister recognized that they "add up to a varied and somewhat formidable bill of fare" but commended his proposals and policies with the statement that "in no circumstances should the Plan suffer from lack of our own effort." There is no doubt of the Indian Government's determination to maximize tax resources, to limit deficit financing, and to take whatever steps are necessary to maintain the Plan, for the impetus of the Plan dominates both Indian thinking and the Indian economy. There are, however, several important elements upon which, at all times, the progress of the Plan depends. More than anything else, the strain on India's foreign exchange resources imposed a curtailment of the Plan. There are, moreover, always limits beyond which efforts to increase internal resources by means of taxation and similar measures cannot be pushed. If the attempt is made to ignore these limits, larger deficits, with all their disastrous consequences, become inevitable. The Reserve Bank of India stated in its 1957 Annual Report that "the Plan targets for both the public and private sectors need to be rigorously and urgently reviewed." It was also realized that it would not suffice to be apprehensive and resort to ad hoc adjustments as the situation developed. The whole Plan might then get out of hand as a result of inflation, or it might disintegrate in the face of inadequate foreign exchange resources. At the time that this paper was being completed,[14] the precise directions in which the rephasing of the Plan was to be effected were under examination.

The adjustments likely to be required would not necessarily distort the Plan. They would imply that the less essential schemes, and some projects with a very high foreign exchange component, would be dropped or postponed. The increase in national income might still amount to 18–20 per cent in five years, i.e., an annual rate of growth of 3.5–4 per cent. This would mean an annual increase of 2.5 per cent in per capita income, an increase which is certainly not small. As for the size of the Plan outlay itself, it may be recalled that, as late as December 1954, the Taxation Enquiry Commission, presumably after

[14] March 1958.

informal consultations with members of the Planning Commission, had placed the probable level of the Second Plan at Rs 35 billion, broadly on the assumption that it should correspond *at least* to the average for the last two years of the First Plan. The Commission's tax recommendations were to some extent governed by this assumption. When the Plan frame was prepared in March 1956, the outlay was placed higher, but at only Rs 43 billion; subsequently, this was moved up to Rs 48 billion as it was felt that an outlay of Rs 43 billion would be inadequate to attain the objectives set. This total itself was subsequently revised upward. If the general economic background—both internal and external—had been propitious, the larger Plan could have been carried through. The adjustments required when unforeseen changes in circumstances make this achievement extremely difficult do no more than restore the somewhat more modest shape which, at an earlier stage, appears to have been intended for the Plan.

As valuable experience is gained and beneficial results are attained, systematic appraisal of the impact of the development process on the living conditions of various groups in the economy, in both rural and urban areas, would be useful, since the Second Five Year Plan is part of a longer term development program. Important institutional changes are taking place, through land reform, community development, growth of the cooperative movement, and other policies. To what extent these, in turn, impinge on productivity in various sectors is important but is not yet calculable. In recent years, there has been steady growth in the economy which has raised real income all around and has also improved living standards. There has probably been a slight shift in incomes to the agricultural sector, and it is possible, though no definite conclusion can be drawn, that in the process of growth a somewhat better distribution of income has resulted. Some of these aspects are being studied in universities and other centers, sponsored by the Research Programs Committee of the Planning Commission. The studies cover three main fields: the employment and income impact of certain major multipurpose projects in particular regions, the changing pattern of urban and rural economic structure in selected centers, and problems of public administration, in particular of personnel and organization.

While difficulties have currently arisen in financing the Plan, and resources are being stretched, it is important to stress the progress attained so far: the technical and administrative tasks have been by and large faced competently, and major projects in steel, irrigation and electricity, fertilizers, locomotives, and various other fields are shaping up well. When a large development program is under way and every section in the community is called upon to make sacrifices, economy and efficiency in administration—not only in ordinary general

government, but also in executing the development projects themselves—evoke greater response from the people in shouldering the burdens; if the community is impressed that waste in public expenditures is avoided at each stage and that beneficial schemes of development are being completed with a high degree of efficiency, additional tax burdens become acceptable as the main source of finance for the development schemes. This is adequately recognized in India, and special efforts are being made to secure economy and efficiency. There has evolved over the years a well-tried administrative system; the personnel are, by and large, competent, and, especially at the higher levels, they are comparable to those in any of the advanced countries. No less important is the thinking and response of the people; awareness of economic change itself is affecting, albeit slowly, the traditional social attitudes which have inhibited progress, and the process of development itself is in turn facilitated. The inert weight of local prejudice and tradition is gradually giving way, partly under the impact of community development schemes. The response of the people is also fostered by the approach and techniques of planning adopted; while necessarily the Plan is largely centralized, there is scope for local initiative and participation, and there is no attempt at compulsory conditioning of the people. The Second Five Year Plan is crucial in the sense that, attending primarily as it does to essential requirements, such as the creation of the basic economic and social overheads and meeting such urgent needs of the people as food and clothing, it is modest in comparison with urgent requirements; but in relation to resources, it is somewhat ambitious. If the difficulties in mobilizing the necessary resources for the Plan are met, in part with external assistance, and the Plan succeeds substantially, it would set the tone for the longer term perspective and would render further growth less uncertain.

Advance Deposits on Imports

Jorge Marshall*

THE GOLD AND FOREIGN EXCHANGE reserves of small or poor countries are often not large enough to make it easy to operate foreign exchange markets virtually free from quantitative restrictions.[1] Furthermore, it may not be desirable on other grounds for such countries to invest a large proportion of their assets in foreign reserves, when there are other claims upon savings which deserve priority. There are, however, positive advantages for such countries in maintaining liberalized exchange markets, so that they have a direct interest in carrying out the international commitments into which they have entered, by joining the International Monetary Fund, to avoid the use of restrictions on the making of payments and transfers for current international payments. Many of them also wish to maintain certain controls to influence the rate of growth or the income distribution of their economies; and in these circumstances the maintenance of balance of payments equilibrium without recourse to exchange control measures requires a flexible, well-timed, and skillful management of monetary and/or fiscal controls of a kind for which the experience of more highly developed countries may not give adequate guidance.

Some countries have relied upon a floating exchange rate with the support of domestic measures to cope with any external disequilibrium; but if a floating rate is permitted, it is usually thought desirable to keep it as stable as possible. Thus, even with a floating rate, monetary and/or fiscal controls are still necessary to correct not very strong expansionary or contractionary movements.

In principle, a large number of instruments of monetary control are available for the use of central banks in underdeveloped countries; however, for a variety of reasons, many of them are not in fact, or cannot be, used. There may be serious doubts about their efficiency for the purposes for which they have been used in other countries. Deeply

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[1] This paper was presented to the Fifth Meeting of Technicians of Central Banks of the American Continent, held in Bogotá in November 1957.

rooted popular prejudices and political opposition have to be taken into account. Open market operations, where the central bank sells securities in the market and thereby draws reserves away from the banking system, may be impossible because there is no organized money market or because suitable securities are not available in sufficient volume. The transfer of fiscal or public deposits between the commercial banks and the central bank, the effects of which may be similar to those of open market operations, may also be impossible because of institutional arrangements which are difficult to change. In these circumstances, several countries (e.g., Ecuador and Chile) have recently made use of compulsory payment of advance deposits on imports as an instrument for ensuring effective monetary control and helping to maintain balance of payments equilibrium.

If advance deposits are to be effective for these purposes, it is essential that they be maintained with the central bank and be sterilized by it. The payments may be made in a variety of ways; for example, they may be made in anticipation of payment of customs duties, consular fees, or other taxes. But irrespective of the way in which they are made, their effects should be the same. These effects may turn out to be similar to those of the more conventional instruments of policy, which may be difficult, or even impossible, to apply because of institutional factors or of certain disadvantages irrationally imputed to them. Advance deposits may have an even greater effect than conventional instruments upon the balance of payments equilibrium, which is the most important objective of the monetary policy that is being pursued.

A careful examination of the economic characteristics of a number of underdeveloped countries suggests that advance deposits on imports are likely to be a useful instrument of monetary management where the objective of external balance without resort to quantitative restrictions is being pursued under the following circumstances: the economy depends largely on foreign trade; the level of external reserves is rather low; the desire is to attain the objectives of economic policy mainly by indirect inducement; and the country faces the danger of, or is actually suffering from, a balance of payments disequilibrium which is not very severe.

General Characteristics

The requirement of advance deposits on imports means that the period for financing import inventories is lengthened and, therefore, the amount of capital tied up in this way is increased. Larger financial

resources will be necessary—either as importers' working capital or as bank credit advanced to importers—to finance a given volume of import inventories. The magnitude of the additional demand for financial resources will depend on the rate of import flow (the higher the rate, the larger will be the amount of financial resources tied up), the percentage of import values which the authorities require as advance deposits, and the period during which the volume of import financing has to be increased as a result of the advance deposit requirement. The significance of the first two of these three influences is obvious and requires no special discussion. The establishment of percentages even higher than 100 is conceivable, and the required percentages may be changed as frequently as desired in order to give adequate flexibility to the policy, the effectiveness of which will tend to vary proportionately with the magnitude of the percentage. The significance of the time factor needs closer examination, however.

The time factor is relevant because it determines the amount of financial resources which has to be tied up. Let us assume that imports are paid for upon delivery of the goods and that advance deposits have to be made before an import order is placed, say, 60 days before the arrival of the goods. If importers maintain inventories equivalent to 60 days' imports, a 100 per cent advance deposit means that the financial resources needed to finance import trade will be doubled. If advance deposits have to be paid 30 days before the customary date of paying for imports, the financial resources needed for import financing will be increased by 50 per cent.

Apart from any interest cost involved in carrying a certain amount of advance deposits, the effects of their introduction or of any change in the amount required will be complete as soon as the financial resources needed to make the deposits have been accumulated or, if requirements are made less stringent, as soon as those resources have been released. If the required percentage is increased, it may take some time before all the new financial resources are accumulated, but thereafter the advance deposit requirement will be neutral with respect to the level of expenditures. Like most monetary and fiscal measures that influence the level of economic activity, advance deposit requirements may be used to offset expansionary or contractionary tendencies by suitable changes in either direction in the percentage of the import value that has to be deposited.

The maintenance of constant percentages does not mean that the financial resources needed to finance them will remain constant. The volume of these resources will also depend on changes in the volume of import demand or in the time period between advance deposits and normal payments for imports.

If it is assumed that inventories are maintained at a uniform proportion of imports, the total financial requirements for additional inventories and for additional advance deposits will change in the same proportion as the flow of imports. If the flow of imports increases, no new financing will be required after the amount of new resources has been tied up in inventories and advance deposits.

Any changes in the inventory requirements of importers will affect the volume of resources tied up in advance deposits in accordance with the way in which the new inventories are accumulated. Let us assume an annual rate of imports of 120 million and that inventories equal to two months' imports are necessary, so that 20 million will be tied up in that form of investment. Let us assume also that advance deposits extend from two to three months the period for which the financing of inventories is required, thus increasing the financial resources required by 10 million. If importers then decide that they need inventories equivalent to four months' instead of two months' imports, 20 million of additional financial resources will be required. To build up the additional inventories, importers have either to increase their orders abroad or to reduce their sales at home. If the first procedure is followed, additional resources will be needed to finance advance deposits on the additional imports, until the new desired level of inventories is reached. If orders are then reduced to normal, the resources tied up in advance deposits for the extra imports will be released. The magnitude of the resources needed and the time during which they will be tied up will depend on the rate of inventory expansion. Changes in inventory requirements that are made effective by a reduction of sales at home will not affect resources tied up for advance deposits.

Inventories are a variable magnitude, and even if, for the sake of simplicity, we speak of "normal" inventories, the stocks actually in existence will seldom be "normal." Any change in expectations about either domestic or foreign markets or in trade and exchange regulations will alter the "normal" standard. Any disappointment of expectations will cause undesired changes in inventories which will bring them to a level that is not "normal." These changes may themselves be the result of changes in the orders placed by importers; in that event, the requirement of advance deposits will make the accumulation of new inventories more difficult because of the extra financing needed for the deposits. The existence of advance deposits will, however, facilitate the drawing down of inventories, for the financial resources then released will be greater than when no advance deposits are required.

Advance Deposits, Devaluation, and Multiple Exchange Rates

If the essential purpose of advance deposits is to increase the cost of imports, the question naturally arises whether there is any difference, from this point of view, between advance deposits, devaluation of the import exchange rate, and multiple exchange rates. An exhaustive examination of this question would extend this paper beyond reasonable limits. However, some general comments may be made here, which, it should be understood, have no policy implications.

A devaluation of the import exchange rate affects all international payments; advance deposits affect only payments for imports. But this difference is of little importance where payments for imports are by far the largest part of foreign payments. Changes in advance deposit requirements are usually easier to introduce or to alter than changes in the exchange rate or exchange rates. Devaluation, moreover, may appear to cast doubts on the soundness of the currency or of the exchange system; such doubts are less likely to arise when advance deposit requirements are imposed.

Devaluation of the import exchange rate by itself establishes an exchange margin or spread and creates profits for the government or the agency charged with the operation of the exchange system. Advance deposits imply the financing of new investments which in a "real" sense are unnecessary, and the extra cost of this financing accrues for the benefit of savers and financial middlemen.

Devaluation of the import rate has a contractionary effect on the general level of expenditure only if the proceeds arising from the creation of an exchange margin are sterilized. Likewise, a contractionary effect for advance deposits is assured only if the central bank sterilizes the funds and maintains a tight credit situation.

For many purposes, it is convenient to regard multiple currency practices as equivalent to a series of taxes and subsidies on international transactions. Although the establishment of advance deposits at different percentages for transactions of different types has effects which, in some respects, are similar to those of multiple currency practices, they are not comparable to taxes and subsidies.

Advance deposits cannot be used, as multiple currency practices may be, to encourage exports; to that extent they cannot be criticized in other countries, as multiple currency practices sometimes have been, as conferring upon exporters an unfair advantage. For the same reason, advance deposits offer no solution for the balance of payments problems that arise when buying rates are inadequate because of discrepancies

between foreign and domestic prices; therefore, in this respect they cannot be compared with a general devaluation.

Balance of Payments Effects

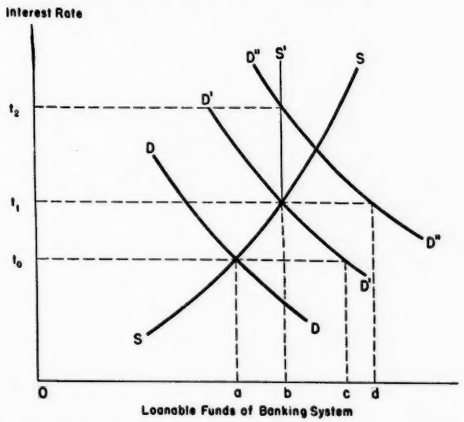
A distinction should be made between the direct balance of payments effects of advance deposits, in the sense that they curtail import demand—and consequently tend to create or increase a surplus, or to reduce a deficit in the balance of payments—and their indirect balance of payments effects, which are related to the decline in money income produced by advance deposits through a reduction in the money supply and consequently in aggregate expenditures. An additional balance of payments effect may result from the impact of advance deposits upon interest rates and upon the flow of short-term capital which they may originate.

The direct effects on the balance of payments arise from the difficulty of importers in obtaining finance to provide the deposits and from the interest cost of maintaining the deposits. The difficulties of obtaining finance may be due to the reluctance of banks to shift credit from other customers to importers, and to the fact that importers cannot offer adequate collateral for additional loans. An obstacle to shifting credit to importers may exist if, because of legal restrictions or custom, the banks are unable or unwilling to charge the importers higher interest rates. The quantitative limitations on credit are most important in a period immediately following the imposition or increase of advance deposit requirements, or at a time when import demand is increasing. In the limiting case in which importers could not obtain additional credit, they would have to postpone import orders until they had built up their savings. The interest cost exists at all times, but it seems unlikely that in most cases it would be a powerful deterrent to imports. If the supply of bank credit is assumed to be perfectly elastic, the only deterrent to importers will be the interest charge on their additional borrowings from the banks. However, this will not generally be the case. The diagram of ordinary supply and demand curves, shown as Chart 1, illustrates the different situations that may arise. The amount of loanable funds of the banking system is measured along the horizontal axis and the price of borrowing, i.e., interest charges, on the vertical axis. The curves are assumed to be of a normal type, with more funds available for lending at higher rates and with a greater demand for loans at lower rates. When advance deposits are introduced or when the percentage of import value to be covered by

advance deposits is changed, a shift in the demand curves from the position DD to $D'D'$ or to $D''D''$ indicates the needs of importers for more credit.

Let us assume a supply of credit that is neither completely elastic nor completely inelastic, as illustrated by the curve SS. An increase in demand for credit will expand the amount of loans from Oa to Ob and raise the interest rate from Ot_0 to Ot_1. If the demand for credit rises to Oc as a consequence of advance deposit requirements, it will not be satisfied at the previous rate of interest. Part of the new demand will remain unsatisfied and part of it will be satisfied at a higher cost. The importance of each of those effects will depend on the elasticities of the demand for and the supply of bank credit.

CHART 1. EFFECTS OF ADVANCE DEPOSITS ON SUPPLY OF AND DEMAND FOR BANK LOANS[1]



[1] For description of diagram, see text.

If the banks are already fully loaned, the shift in demand will produce only an increase in interest charges, and the amount of lending will remain the same. The form in which available funds will be distributed between old and new uses (constituted by advance deposit requirements) will depend on the willingness of borrowers to accept the new interest burdens.

There may be cases where banks are fully loaned but interest charges do not, or cannot, change. There will then be an unsatisfied demand, equivalent to bd, which the banks will have to eliminate by rationing their funds. In rationing, the banks may be either more or less willing

to deny financing to importers. Justification will be offered later for the view that banks in some cases may be less willing to finance advance deposits than to finance other kinds of transaction.

In summary, advance deposits introduce an additional cost for importers; the balance of payments effect will thus be the same as the effect of a devaluation of comparable magnitude on the import side of the exchange rate structure. The cost element is determined not only by the additional interest charges but also by the difficulties of finding any financing at all for at least part of the new funds required.

The problem may be examined in another way: Assume that at the time advance deposits are introduced the economy is in monetary equilibrium, in the sense that planned savings are equal to prospective investments and that any discrepancy between *ex ante* savings and investments is corrected through monetary and/or fiscal action. The introduction of advance deposits without any change in import demand or in the level of import inventories is then equivalent to a forced "investment," which requires from the economy an equivalent amount of savings.

From the assumption that monetary stability will be preserved, implying that total expenditures will not exceed the supply of goods and services at current prices, it follows that room has to be made for the new "investments" by curtailing other expenditures. This requires an actual sacrifice, the magnitude of which is determined by the factors already discussed.

The same objective could be achieved through other measures. The advantage of advance deposits over most other kinds of fiscal or monetary action is that they not only affect the general level of expenditures but at the same time are more effective in specifically curtailing import demand.

Means of Financing Advance Deposits and Currency Required

From the standpoint of the economy as a whole, it is immaterial whether advance deposits are financed privately or by banks, as long as bank financing is not inflationary, i.e., the money-creating process is offset by savings. If importers do not get all the financing they expect, the establishment of advance deposits may mean that the difficulties of placing new import orders will increase and there may be a reduction in their scale of operations. If advance deposits are financed by a net expansion of bank credit made possible by the existence of excess reserves of the commercial banks, the imposition

of the deposits will reduce the free reserves of the banking system and make the banks more amenable to control by the authorities. When the advance deposits are financed wholly out of excess reserves of the commercial banks, the expansion of bank loans will still not give rise to an increase in the money supply and a higher level of money income, since the credit expansion will be neutralized by the transfer of deposits to the central bank. As long as the advance deposits are not financed by a *net* increase in bank loans, their monetary effect is the same, regardless of whether they are provided by importers out of their own funds or by a shift of bank credit from other customers.

The possibility of obtaining foreign funds to finance advance deposits, although it may not be very great,[2] should also receive consideration. If a capital inflow for this purpose does not affect the supply of long-term and short-term foreign capital for other purposes, the restrictive effects of advance deposits will be limited to the interest charges on the new financing. An inflow of short-term capital will relieve momentarily any pressure upon international reserves. If advance deposits are established in foreign currency or if the advance deposits in domestic currency are sterilized, the effect of the balance of payments surplus on the level of money income will be nil.

Importers will not seek external financing unless the internal cost of financing plus any other difficulties associated with it are greater than the external cost would be.

If advance deposits attract foreign funds which otherwise would have been forthcoming for other purposes, the effect of advance deposits upon reserves will be the same; but if it can be assumed that the advance deposit proceeds are not spent by the authorities, they will have a contractionary impact on money income.

If advance deposits are required in foreign currency and are also financed abroad, their effects will be the same as those outlined above for advance deposits expressed in domestic currency and financed abroad. In the case outlined above, however, the additional foreign reserves may accrue to any sector in the economy if transactions in foreign exchange are free, or to the authorized dealers if transactions are restricted, while if they are required in foreign currency, the foreign reserves corresponding to advance deposits borrowed abroad will accrue to the entity or entities entitled to receive advance deposits.

If advance deposits are required in foreign currency but there is no foreign financing, their effect will depend on the structure of the foreign exchange market. If exchange dealings can be carried out only through

[2] However, the possibilities for many importers to obtain more financing abroad should not be disregarded.

the authorities entitled to receive advance deposits, the situation will be the same as with advance deposits required in domestic currency. There will be no change in the holdings of foreign reserves, and the problem for the importers will be that of finding domestic financing. If, however, the authorities who receive advance deposits are not also dealers in foreign exchange, there will be a change in the holdings of foreign reserves, probably in the direction of ensuring that more foreign reserves accrue to the central authorities (central bank, etc.) and less to private banks, dealers, or individuals.

Advance Deposits as a Tool of Monetary Policy

Advance deposits may be conceived as an instrument of monetary policy similar to open market operations or transfers of fiscal or public funds between the commercial banks and the central bank. If the regulations establishing advance deposits require that they be held by private banks, so that lending capacity is unaltered, no use can be made of advance deposits as a monetary instrument, though all that has been said above about advance deposits in general remains valid. But if advance deposits have to be held in the central bank, there will be a net loss of reserves for the banking system and a decrease in its lending possibilities in just the same way as when the central bank sells securities in the open market or when deposits of the public sector are shifted from a commercial bank to the central bank.

The effectiveness of advance deposits as an instrument of credit regulation will depend on the amount of reserves which the banks lose as a result of the payment of advance deposits and the amount of excess reserves that they had before the deposit requirement was imposed. These are also the factors which determine the effectiveness of open market operations or of shifting fiscal deposits; and the limitations that apply to these monetary tools apply also to advance deposits held in the central bank. The reduction in the quantity of money attributable to advance deposits will tend to raise interest rates and to reduce the amount of investments and probably of consumption expenditures.

The effect of advance deposits on the balance of payments will then be threefold: import demand will be more difficult to satisfy because of increasing costs and financing difficulties; to the extent that advance deposits are actually made and funds shifted from the commercial banks to the central bank, there will be a reduction in money income, and consequently in import demand; and to the extent that interest rates are stiffened, more financing will take place abroad, and there

will be an inflow of short-term capital with a favorable temporary effect upon the balance of payments and the level of foreign reserves.

When advance deposits affect the lending policies of the private banks, they may become an effective instrument for checking import demand. Bank loans to ordinary customers diminish reserves only by a fraction of the loans, i.e., by the amounts required to back the newly created deposits plus the part of the loans which the public draws from the banks and prefers to hold in the form of cash. But when the banks lend to importers to finance their advance deposits in the central bank, their reserves will diminish not by a fraction but by the full amount of the loans.

The difference between the effects upon bank reserves of loans for advance deposits and loans for other purposes may be indicated as follows:

Let

a = the legal or customary reserves expressed as a fraction of total deposits,

b = the fraction of new money which the public customarily holds in the form of cash,

A = the excess reserves of the banking system,

B = the amount of new lending by the banking system, and

C = the diminution of excess reserves.

If bank loans are increased by B, then

bB represents the amount of additional cash drawn by the public from the banks, and

$(1-b)B$ represents the amount of new deposits created by the lending activities of the banks.

To back this increase in deposits, either law or custom will require additional reserves, equal to $a(1-b)B$. Excess reserves will be reduced by the public's additional drawings of cash and by the additional reserves required by law or custom. Thus,

$$C = bB + a(1-b)B, \text{ or}$$

$$C = B(a+b-ab)$$

If new bank loans finance advance deposits, all of the new money created by the lending activities of the banks will go to the central bank and the net decline in excess reserves will be equal to B. Both a and b are positive fractions, neither of which can be greater than 1. If $a=1$, it means that the banking system is required to hold 100 per cent reserves against deposits. If $b=1$, it means that the new loans made are drawn entirely by the public in the form of banknotes. In

either of these cases, the reserves of the banking system will diminish by the same amount, equivalent to the volume of new loans. Generally, neither a nor b is equal to 1. If a and b are between 0 and 1, excess reserves will decline by the amount expressed in the formula, which in general will be less than the amount of new loans.

In a realistic situation, we may assume that $b=0.5$ and $a=0.12$, i.e., half of the newly created money is held in the form of cash, and legal reserves are 12 per cent of deposits. New bank lending will then cause a decline in reserves of 56 per cent of the new loans. If legal reserves are 20 per cent of deposits, the loss will be 60 per cent of the new loans. Both cases can be compared with loans to importers for advance deposits, which will imply a decline in reserves equal to the total amount of the new loans.

If one or two banks have a large share of all the banking business of the community, the banking system may be expected to be more reluctant to finance advance deposits than to finance other kinds of enterprise. The banks will then be better aware that ordinary lending operations generally affect only part of their reserves, and will quickly realize that advance deposit financing takes from their reserves the whole of the financing permitted by them for that purpose. In those circumstances, banks may either reduce the amount of lending for advance deposits or increase the cost. In either case, importers will find it much more difficult to maintain the level of import orders that would be possible if the banks made no discrimination between different kinds of loan.

It may also be that the main disadvantage of financing advance deposits on imports—namely, greater losses of reserves—is entirely offset by the fact that a loan to an importer brings in a commission from the sale of exchange. This offsetting effect will be greater when there is a large number of banks, and individual banks do not understand the effects of such loans on their own reserves.

The existence of advance deposits strengthens the built-in stabilizers in the monetary system. An increase in money income will increase the demand for imports, and the contractionary effect of the outflow of exchange reserves will be intensified by the advance deposit requirement. On the other hand, a decrease in import demand will release advance deposits and will have an expansionary effect.

Selective Credit Control and Advance Deposits

In most underdeveloped countries, emphasis has been placed in recent years on the search for instruments of selective monetary control which may help in implementing government policies of economic

development. So far, the results have not been very encouraging. Whatever its purpose may be, monetary policy undoubtedly tends to create a framework within which economic activity can take place, but its use to stimulate certain types of activity has rather limited possibilities.[3]

The mere establishment of advance deposits will reduce the financing of import trade generally and will therefore discriminate in favor of other types of economic activity. But if different percentages of advance deposits were established for different types of import, control might be applied more selectively. First, broad categories of imports could be established, such as cost of living items, essential raw materials and fuel for national industry, machinery and equipment for the development of new economic activities, less essential consumer goods, luxuries, etc. Then by the establishment of different percentages for different categories, the composition of imports could tend to be reshaped in accordance with the broad requirements of an economic development program.

One of the main problems of selective credit control is to ensure that the regulations are properly observed by the banks. This difficulty partly disappears when selective credit control is applied by using advance deposits as an instrument of monetary control. No elaborate machinery is required to check bank lending. Customs clearance requires that advance deposits be made in due time, and penalties can be imposed administratively on either importers or banks.

An Actual Experience—Ecuador

An examination of actual experience in Ecuador provides some empirical foundations for the analysis presented in this paper. However, the facts are not conclusive, because, on the one hand, there is lack of information on certain points and, on the other hand, the interpretation of the data is somewhat blurred because there were other relevant factors whose significance cannot be exactly measured.

In 1948, the Monetary Board of Ecuador was given the power to request advance deposits on imports. Very little use was made of this power except that a previous deposit of taxes for import licenses for certain commodities was required. In February 1951, this requirement was abolished at the request of the Chamber of Commerce of Quito and Guayaquil, which had maintained that postponing the payment of the tax would contribute to offsetting the restrictive tendencies in the

[3] See I. G. Patel, "Selective Credit Controls in Underdeveloped Economies," *Staff Papers*, Vol. IV (1954–55), pp. 73–84, which examines the subject from the point of view of short-term stability and of long-term growth.

means of payment.[4] The figures available suggest that the relief afforded by this decision led to increased import demand, despite the fact that at the same time there was an economic contraction, as measured by changes in the money supply (Table 1 and Chart 2).

TABLE 1. IMPORT PERMITS OUTSTANDING AND MEANS OF PAYMENT IN ECUADOR, JANUARY-JUNE 1951[1]

	Import Permits (*million U.S. dollars*)	Money Supply (*thousand sucres*)
January	23.7	892.9
February	25.1	882.9
March	26.6	864.8
April	27.7	869.0
May	25.9	855.2
June	29.7	848.1

Source: Banco Central del Ecuador, *Memoria del Gerente General, 1951* (Quito, 1952), Tables III and VI, pp. 62 and 65.
[1] Data as of end of month.

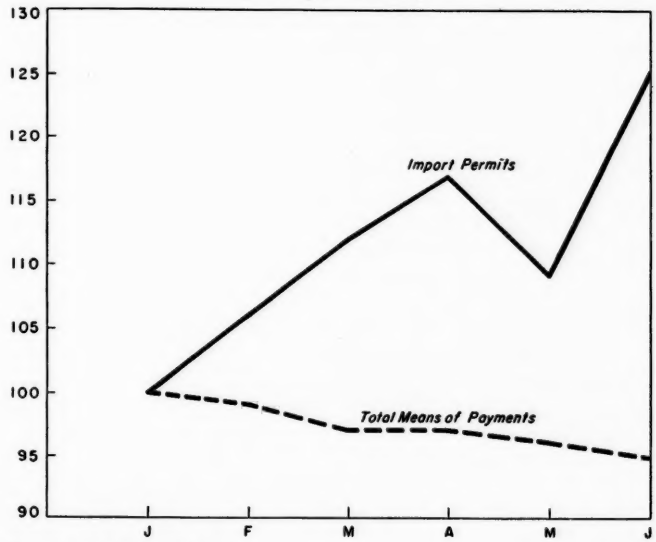
Subsequently, at the beginning of 1953, after considering a request from the Association of Textile Industrialists of Ecuador, the Monetary Board, using the powers granted under Articles 9 and 16 of the International Exchange Law, decided, as a measure of protection to the national textile industry, (1) to require that, prior to the granting of an import license, a deposit of 50 per cent of the value of the commodities included in certain paragraphs of the tariff law should be made, and (2) that all of the exchange tax of 33 per cent on the c.i.f. value of the same commodities should be paid before the import license was granted. In order to avoid an increase in import demand, the requirement of prior payment of all import taxes was extended in July to all commodities.

In 1954 and 1955, Ecuador made extensive use of changes in the percentages of advance deposits and prepayments of taxes in order to influence the balance of payments and the domestic credit situation. In April 1954, an arrangement was made for the gradual elimination of advance payments of customs duties. The subsequent increase in import demand led to the reimposition, in November 1954, of various advance deposits and prepayments of imports and customs duties: For List 1 imports (essential and semiessential goods), an advance cash deposit with the Central Bank of 50 per cent of the c.i.f. value of imports paid before delivery and of 15 per cent of the c.i.f. value of imports paid against sight or time drafts was required. To obtain an

[4] Banco Central del Ecuador, *Memoria del Gerente General, 1951* (Quito, 1952), p. 44.

CHART 2. INDICES OF IMPORT PERMITS OUTSTANDING AND TOTAL MEANS OF PAYMENT IN ECUADOR, AT END OF MONTH, JANUARY-JUNE, 1951[1]

(*January 1951 = 100*)



[1] Based on data in Table 1.

import permit for List 2 imports (nonessential and luxury goods), an advance deposit with the Central Bank of 40 per cent of the value of the customs duties to which the imports were liable was required, in addition to the advance deposit in foreign exchange of 100 per cent of the value of the imports; the advance deposit served as partial payment of customs duties.

The advance deposits imposed at the end of 1954, in combination with other factors, reduced the total of import permits from US$17.3 million in October 1954 to an average of US$6.4 million in January–February 1955. It is difficult to distinguish between the effects of advance deposits and the effects of the credit restrictions associated with a seasonal decline in exports. But the role of advance deposits was probably of considerable importance.

In February 1955 the 15 per cent advance deposit for certain List 1 imports was removed. However, in July of that year an advance deposit of 30 per cent was established for all List 1 imports, to cope with the serious payments problem confronting Ecuador at that time. The

measure was relaxed somewhat at the end of September 1955, when a deposit of 15 per cent was required for some List 1 items and of 20 per cent for the others.

As a result of the elimination in February 1955 of the 15 per cent advance deposit, credit was relaxed. This reversed the import trend, as is shown by Table 2 and Chart 3. The table and chart also show the downturn of import permits in the third quarter of 1955. What part of this downturn can be attributed to advance deposits and what part to the other measures adopted by the authorities? In addition to establishing advance deposits, the authorities tried to redress the balance of payments by shifting certain import commodities from List 1 to List 2, and by extending the list of prohibited imports in September 1955. The second measure came into effect at a time when the demand for imports had been considerably reduced (Chart 3). In July and August 1955, import permits were below the average for January and February of that year. The prohibited list excluded imports which in 1954 had been worth US$1.3 million, and therefore relieved the pressure of imports at a monthly rate of less than US$110,000 per month. This figure does not appear to be significant in relation to fluctuations in import applications of the order of over US$8 million per month.

By shifting imports from List 1 to List 2, the authorities undertook an effective depreciation of the exchange rate. During 1954, the value of imports of commodities that were thus shifted amounted to US$10.8 million. The shift changed the composition of imports roughly as follows: Before the shift, 88 per cent of imports came in at a rate of S/15 per U.S. dollar and 12 per cent at S/17.30 per U.S. dollar, making an effective average import rate of S/15.28 per dollar. After the shift, 76 per cent of imports came in at S/ 15 per U.S. dollar and 24 per cent at S/17.30 per U.S. dollar, making an effective average import rate of S/15.55 per dollar.

The sucre was thus effectively devalued by $1\frac{3}{4}$ per cent. This was a

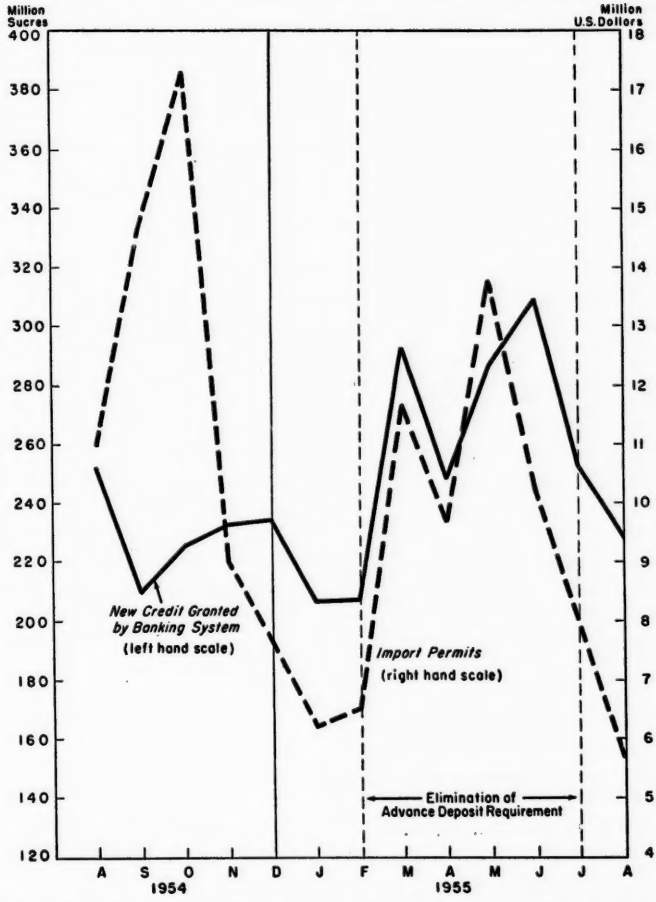
TABLE 2. IMPORT PERMITS IN ECUADOR, 1954–55[1]

(*In millions of U.S. dollars*)

	1954	1955	Change, 1954–55
1st quarter	22.0	24.3	+2.3
2nd quarter	30.8	33.7	+2.9
3rd quarter	36.4	19.8	—16.6
October	17.3	5.7	—11.6

[1] Based on data from Banco Central del Ecuador, *Información Estadística* (Quito).

CHART 3. TOTAL NEW CREDIT GRANTED BY BANKING SYSTEM AND VALUE OF IMPORT PERMITS GRANTED IN ECUADOR, MONTHLY, AUGUST 1954-AUGUST 1955[1]



[1] Data from Banco Central del Ecuador, *Información Estadística* (Quito).

very small devaluation, if it was to be regarded as a measure for checking increased import demand that resulted from anticipatory buying in the expectation of a tariff revision and of a more drastic devaluation.

The shift of commodities also had the effect of increasing the required percentage of advance deposits. Imports in List 1 were subject to 30 per cent advance deposits and those in List 2 to 100 per cent.

The effects of advance deposits on the financing of Ecuador's imports can be estimated on the assumption that goods imported at an annual rate of US$10 million were shifted from List 1 to List 2 and that imports in List 1 continued at nearly US$70 million per year. Since a period of six weeks usually elapses between import licensing and actual normal payment for goods, advance deposits amounting to about 12 per cent of the annual rate of imports are tied up throughout the year. To finance the advance deposits required for the goods shifted from List 1 to List 2, US$1.2 million was necessary; and to finance the deposits required for the goods remaining in List 1, US$2.5 million was needed.[5] In all, the introduction of advance deposits required additional financing of US$3.7 million (S/ 54 million), one third of which was attributable to the shift of goods from List 1 to List 2. This calculation is based on the assumption that there was no change in the general level of import demand. Actually, import demand declined; the fact that by the end of October 1955 advance deposits of nearly S/ 40 million had been made suggests, moreover, that there may be an error in the assumption of a six-week period between licensing and actual payment.

Advance deposits had indeed been required in Ecuador for List 2 goods before July 1955. At that time, however, the average percentage of advance deposits was raised from 12.5 per cent of total imports to about 46 per cent. The cost of financing those new advance deposit requirements, at an interest rate of 10 per cent per annum, amounted to less than $\frac{2}{3}$ of 1 per cent of the value of the imports. On the other hand, the absorption of bank reserves by advance deposit requirements was considerable.

Ordinary loans by private banks during the first three quarters of 1954 increased by S/ 101 million; in the same period of 1955, they increased by only S/ 15 million. Between the end of 1954 and October 1955, excess reserves dropped from S/ 40 million to S/ 30 million, which is the customary limit at which private banks cease to lend. The absorption of S/ 40 million in advance deposits more than offset other factors making for an increase of bank reserves during that period.

[5] Six weeks' imports of goods in List 1 would be US$8.4 million, and on these imports a deposit of 30 per cent was required.

In countries like Ecuador, a tight credit situation is the best guarantee for stability of money incomes. Since the propensity to import is very high, even a mild monetary expansion sometimes has a large balance of payments effect. An import function based on only five observations suggests a marginal propensity to import in Ecuador of about 0.4. This estimate may be too high, but the correct measurement is not likely to be lower than 0.3. Any contraction in money income in Ecuador is therefore bound to produce a considerable effect on the demand for imports and the balance of payments. The evidence suggests that the advance deposit requirements introduced in Ecuador in the middle of 1955 played a decisive role in redressing the balance of payments disequilibrium of that country.

A Note on Gold Production and Additions to International Gold Reserves

Oscar L. Altman*

THE PURPOSE OF THIS NOTE is to survey trends in the production of gold and the flow of gold to monetary reserves, with the intention of estimating the probable additions to international reserves during the next decade.[1] The discussion is based on the assumption that the U.S. price of gold will remain at $35 per ounce.

Additions to the total gold reserves of the countries outside the Soviet bloc will depend upon the amount of gold initially made available by new production, the sales of gold by the Soviet bloc to the rest of the world, the net amount of gold used for industrial and artistic purposes, and the amount of gold bought privately for saving or hoarding. Gold acquired for this last purpose may be in the form of gold coins, semi-processed gold, or jewelry and other fabricated objects.

Gold Production

World gold production, excluding that in the Soviet bloc countries, increased in every year in the postwar period, except 1951 and 1953, and by 1957 its value had reached $1,020 million, compared with $736

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[1] The longer the period, the more hazardous is the estimate. Yet a period of two or three years would not be meaningful for the present problem. Most of the writings on gold production agree that a decade seems to be as long a period as can be dealt with significantly.

It does not seem necessary, for the purposes of this paper, to discuss whether the only "satisfactory" way to increase international reserves is to increase gold reserves, on the ground that increases in reserve holdings of foreign exchange (dollars, sterling, etc.) by some countries are accompanied by larger liabilities of others, so that exchange holdings cannot increase reserves on a "net" basis. This appears to be what Harrod had in mind when he said, "While these ad hoc expedients may serve a useful purpose for the time being, there is no doubt that in due course it will be desirable to devise a radical cure for the gold shortage." (Roy F. Harrod, "Imbalance of International Payments," *Staff Papers*, Vol. III, No. 1, April 1953, p. 5.) There is a discussion of this question in B. Goodman, "The Price of Gold and International Liquidity," *Journal of Finance* (Chicago), Vol. II (1956), pp. 15–28.

TABLE 1. VALUE OF WORLD GOLD PRODUCTION, EXCLUDING COUNTRIES IN SOVIET BLOC, 1910–56

(Valued at US$35 per fine ounce; in millions of U.S. dollars)

Year	Value	Year	Value
1910	704	1940	1,311
		1941	1,266
1915	747	1942	1,126
		1943	872
1920	558	1944	784
1925	626	1945	736
		1946	752
1930	673	1947	767
1931	715	1948	785
1932	768	1949	817
1933	785		
1934	813	1950	846
		1951	827
1935	872	1952	852
1936	961	1953	849
1937	1,030	1954	897
1938	1,142		
1939	1,219	1955	944
		1956	980
		1957	1,020

Sources: Data for 1910–40 are based on figures in Board of Governors of the Federal Reserve System, *Banking and Monetary Statistics* (Washington, November 1943), Table 159, adjusted to exclude the U.S.S.R., China, and Rumania; the 1910–33 figures in the source have been revalued from $20.67 per fine ounce to $35. Data for 1941–44 are from *Federal Reserve Bulletin* (Washington) and exclude the U.S.S.R. Those for 1945–56 are from *International Financial Statistics* (Washington) and exclude the Soviet bloc. Figure for 1957 is preliminary.

million in 1945 (Table 1). The average compound rate of increase over the entire period was 2.7 per cent per year; in the five years 1953–57, it was 4.7 per cent per year, because of the expanding production in South Africa. Maintenance of, or an increase over, the present level of production during the next decade appears to depend mainly upon the course of South African production, whose comparative importance is suggested by the data in Table 2.

The increase in South African production during the past few years has been due to new mines in the West Rand and the Orange Free State. The output of these mines rose from 100,000 ounces in 1951 to 3.1 million ounces in 1953 (27 per cent of total South African output) and 5.3 million ounces in 1955 (38 per cent of the total).[2] Total output has continued to rise. In 1957 the value of the output of all mines was $596 million, about 7 per cent higher than in 1956; in the third quarter

[2] *The Economist* (London), June 9, 1956, p. 1009.

TABLE 2. VALUE OF WORLD GOLD PRODUCTION, EXCLUDING COUNTRIES IN SOVIET BLOC, 1948–57

(Valued at US$35 per fine ounce; in millions of U.S. dollars)

	1948	1950	1956	1957	Change, 1948–57	
					Amount	Per cent
Union of South Africa	405	408	556	596	+191	+47
Canada	124	155	154	155	+31	+25
United States	71	80	65	64	-7	-10
Australia	31	30	36	38	+7	+22
All other	154	173	169	167	+13	+8
Total	785	846	980	1,020	+235	+30

Source: *International Financial Statistics* (Washington).

of 1957 it was at the rate of $611 million per year, and in the fourth quarter at a rate of $599 million. Production in the rest of the world has been approximately constant, with increases in some countries offsetting decreases in others. A brief examination of the gold mining industry and its problems will be of assistance in suggesting the extent to which these trends are likely to continue.

ECONOMIC PROBLEMS OF GOLD MINING

Gold mining has been, and it is assumed will continue to be, subject to the combination of a fixed dollar price[3] for gold for official uses

[3] The assumption, made in this paper, that the U.S. price of gold will continue to be $35 per ounce does not in any way suggest that an increase may or may not be desirable. The United States has stated many times that it does not intend to increase its buying price of gold. (See, for example, International Monetary Fund, *Summary Proceedings of the Eleventh Annual Meeting of the Board of Governors*, Washington, September 1956, p. 69.) A recent Canadian study noted, "In considering whether the United States Government is likely to raise the price at which it buys gold it should be remembered that the gold standard is a gold-price-fixing system and that the only change in the price of gold which has been made in the last century and a half was that made by President Roosevelt in 1933–34 when the United States had for the time being abandoned the gold standard. He hoped that by raising the price of gold a rise in the price of other commodities might be brought about also, thus easing the severity of the price deflation. It is conceivable that in circumstances as serious as those of 1933 such a manoeuvre might once more be tried by an harassed United States Government. To hope for a rise in the price of gold in a period of prosperity is quite another matter. . . . Although the continued purchase of gold by the United States Government at the present price can be relied on, it would be most unwise to count upon an early rise in the Washington price of gold." (Report of the Committee of Inquiry into the Economics of the Gold Mining Industry, *Gold Mining in Ontario*, Toronto, 1955, p. 24.) Essentially the same point was made by the Bank for International Settlements in its *Seventeenth Annual Report* (Basle, 1947), p. 96.

South Africa has argued on many occasions that the price of gold should

(though the hoarding demand for gold kept its "free market" price above the U.S. official price for a considerable number of years) and increasing costs of labor and materials. Increasing costs arising from higher prices and wages apparently cannot be completely offset by increasing efficiency of operations. The amount of gold production that can be directly attributed to subsidies is relatively small, though it is significant for marginal producers or for marginal production in certain countries. New discoveries require a number of years of development to come to maximum output.[4] Major gold discoveries occur infrequently, and recent discoveries have required the solution of many difficult technical and social problems and the long-term investment of substantial amounts of capital.[5]

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be increased (e.g., IMF, *Summary Proceedings, op. cit.*, pp. 62–66). Nevertheless, in a Report of the Transvaal and Orange Free State Chamber of Mines, it was stated, "Although many of us hold the view that the time will come when there will be an increase in the price of gold, I firmly believe that the Industry, in its current operating decisions, should continue to avoid assumptions regarding such a rise in price." (*Sixty-Sixth Annual Report, Year 1955*, Johannesburg, p. 58.)

[4] After surveying the gold discoveries since 1814, Kitchin concluded that "Averaging all these occurrences we have four alluvial discoveries, reaching their maximum in four years with £8 million each, four reef discoveries reaching their maximum in seventeen years with £5 million each, and one banket discovery [The Rand, 1886] which has lasted forty-three years without having reached the top and has so far attained £43,500,000." (Joseph Kitchin, "Gold Production," *The International Gold Problem*, London, 1931, p. 60.) The time needed to bring important mines into operation is strikingly illustrated in a press announcement dealing with a proposed ultra-deep mine, Western Deep Levels, Ltd. It was estimated that production from the shallowest level would start 6–7 years after the project was started; from the middle level, 9 years; and from the ultra-deep level, about 12,500 feet, 18 years. (*The South African Mining and Engineering Journal*, Johannesburg, August 2, 1957, pp. 1504–5.)

[5] These points are suggested by the Anglo American Corporation of South Africa Limited in its *39th Annual Report* (Johannesburg, 1955, pp. 18–19) which noted that "in a little under ten years, 11 of the 12 mines projected in the original Orange Free State development programme have come to production. Of these 11 producing mines, six are administered by the Anglo American Corporation. The magnitude of the achievement can best be illustrated by a number of globular statistics. During this development programme, 27 shafts have been sunk to an aggregate depth of over 22 miles and over 430 miles of underground tunnelling and development have taken place. In order to allow underground development to proceed on this scale, it has become necessary to pump water from underground and provide facilities for its disposal by means of evaporation at a rate of 4,000,000,000 gallons a year. The weight of water pumped to the surface in 1955 was 22,000,000 tons or nearly three times the tonnage of ore crushed during that year. Approximately £18,000,000 has been spent on housing for Europeans alone. The total population occupying the townships thus created and the accommodation provided on the mines is now over 130,000, of whom 8,000 Europeans and 50,000 Natives are in the direct employment of the mines. The mines themselves have so far involved a total capital investment of the order of £167,000,000, some £95,000,00 being for the mines of the Anglo American Corporation Group." As the mines go deeper, total investment increases substantially, and new technical problems appear. The proposed ultra-deep mine, Western Deep Levels, Ltd., has an estimated capital cost of over £20 million, compared with an average

After World War I, and particularly until 1934—when the United States raised its gold price from $20.67 to $35 per fine ounce—there were repeated forecasts that gold production would decrease. These forecasts, including those made for the Gold Delegation of the League of Nations, were almost universally too pessimistic.[6] Gold production increased slowly during the 1920's: by 7 per cent from 1920 to 1925 and by 7½ per cent from 1925 to 1930. Between 1929 and 1933, under the stimuli of unemployment and falling costs, but without any change in the dollar price of gold, production increased by 22 per cent. After the U.S. price of gold was raised in January 1934 to $35 per ounce, production increased faster. By 1940 it was more than 60 per cent higher than in 1933. Production fell sharply during World War II, largely because wartime requirements diverted resources to other ends. By the end of the war, production had fallen to the 1933 level. In the postwar period, gold mining has been faced with an unchanged official

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cost of the present Orange Free State mines of about £14½ million. (*The Economist*, July 27, 1957, pp. 336–37.)

[6] C. O. Hardy, when discussing the most important forecasts of gold production made for the 1920's and the 1930's, concluded that they were unduly conservative, partly for the reason that "estimates made by mining engineers on a basis appropriate for corporate purposes are inherently more conservative than the kind of estimates that are needed as a basis for economic policy." (C. O. Hardy, *Is There Enough Gold?* Brookings Institution, Washington, 1936, Chap. 3, p. 61.) Kitchin's estimates of production in the Rand were too low, as Hardy noted. Kitchen himself pointed out in 1930 that "past estimates of the Rand's later production have been much too low"; he found that the average of ten estimates made between 1913 and 1926 of the value of 1929 production came to £30 million. Actual production was valued at £43.5 million, or 40 per cent more than the average estimate. (Kitchin, *op. cit.*, pp. 60–61.) Kitchin as late as 1926 had estimated that South African production in 1930 would be £75–80 million, compared with £80 million in 1925. (Royal Commission on Indian Currency and Finance, *Appendices to the Report of the Royal Commission on Indian Currency and Finance*, London, 1926, p. 519.) In fact, production increased by 10 per cent. It should be noted that during these years the official price of gold remained the same but costs and prices increased substantially.

In 1930, two estimates of South African production for 1930–40 were published. One was official; the other, by Kitchin, was about 10 per cent higher. Both were too low. Yet Kitchin had "the advantage of special knowledge" and calculated separately "the lives, outputs and prospects of thirty-nine mines (including six not yet producing)." (League of Nations, *Interim Report of the Gold Delegation of the Financial Committee*, Geneva, 1930, p. 60; see also p. 89.)

A more recent illustration of the same difficulty in estimating production is the testimony in April 1954 of the President of the Homestake Mine, the largest in the United States. He testified that, despite the new mines in the Rand and the Orange Free State, he doubted that South Africa "would do much more than hold its own." (*Gold Reserve Act Amendments*, Hearings Before a Subcommittee of the Committee on Banking and Currency, U.S. Senate, Washington, 1954, p. 264.) Since then, the rate of South African production has increased by more than 40 per cent.

All of this underscores the difficulties and the hazards of making any estimates, including those made in this paper.

dollar price but with substantially higher costs.[7] Though production in 1957 was 40 per cent more than at the end of the war, it was still 22 per cent less than the all-time peak reached in 1940.

The fact that the official price of gold in terms of dollars has been $35 per ounce since 1934 has not ruled out changes in the free market price of gold. Sales of new gold at premium prices have helped, during most of the postwar period, to increase the average price realized from new production. For example, the average premium realized on South African sales (at both official and premium prices) was 10 per cent in 1952 and 5 per cent in 1953.[8] The current premium is minimal.

The unchanged official price of gold also has not ruled out changes in domestic prices, as measured in local currencies, in various countries. From this point of view, the economic conditions under which gold is produced may be classified in two groups, depending upon the behavior of the domestic price. The United States and Canada are the two countries where the price of gold in local currency now is the same as, or lower than, the price in 1934. The U.S. price has been unchanged since 1934. The Canadian price, in Canadian dollars, has fluctuated between 11-15 per cent above, and 6 per cent below, the price in 1934. In 1957 the price of gold in Canadian dollars was about 4 per cent below that at the beginning of 1934. Neither country protects the domestic market for gold, but gold production is a much more important industry, both absolutely and relatively, in Canada than in the United States. In all the other important gold producing countries, the price of gold in local currency is now higher than in 1934. It has

[7] The net increase in the costs of gold mining reflects increases in domestic prices (which in most cases have involved devaluations), changes in productivity, changes in the grade of ore, and other factors. Canadian costs, which were affected to only a minor extent by changes in the external value of the Canadian dollar, changed as follows:

	Grade of Ore Mined (*oz. per ton*)	Variable Costs Per Ton	Variable Costs Per Ounce of Gold	Price of Gold in Canada (*per oz.*)
1932	.412	Can$4.20	Can$10.20	Can$23.46
1935	.306	4.31	14.10	35.15
1939	.281	4.94	17.62	36.20
1946	.243	5.68	23.37	36.75
1954	.249	6.08	24.40	34.06

In the postwar period, the grade of ore mined has remained relatively unchanged, and the variable costs per ton of ore and per ounce of gold recovered have tended to move together. This was not the case in the earlier period, when the variable costs per ounce increased faster than the variable costs per ton. Furthermore, in 1954 the difference between the selling price and variable cost was Can$9.66, or Can$3.72 less than in 1946. Of this, Can$1.03 was due to higher variable costs and Can$2.69 to a change in the Canadian dollar relative to the U.S. dollar. (Report of the Committee of Inquiry, *op. cit.*, pp. 107 and 110.)

[8] South African Reserve Bank, *Annual Reports*, 1952–57 (Pretoria).

increased by 80 per cent in Australia and South Africa and 250 per cent in Colombia and Mexico. In these and other countries, therefore, the cost-price squeeze of the past few years is attributable only in part to the price term of the relationship. Price advantages initially contributed by devaluation have been more than offset by rising domestic wages and other factor costs. It is possible that a devaluation, by modifying the terms of trade, may lower aggregate real income. This may be the case whatever the export commodity is. If the advantage of the devaluation is not lost through domestic cost increases, however, production will be stimulated, whether the export commodity is gold or anything else.[9] In a number of countries, gold production, along with other export industries, has been the victim of increases in domestic prices.

Gold production has also been adversely affected during the postwar period by the effects of sustained prosperity and full employment. The boom in all other kinds of mining, and the increased demand for mining labor, would by itself have raised gold mining costs, though this need not be the case where gold is a by-product of copper and other metals.[10] Passing of the boom, or advent of a depression, with its attendant unemployment and its falling prices and costs, would make gold mining—with its unlimited market at stable prices—relatively more attractive. It was this factor that accounted for the 22 per cent increase in gold output between 1929 and 1933. Without this built-in stability, gold mining would have been affected more than it has been in the postwar period. It has been observed that, at least in Canada, "the steady employment which the gold mines offer is a major attraction, especially to heads of families. In the gold mines, something like a 'guaranteed annual wage' has long been a reality . . . the peculiarities of gold mining as an occupation suggest that the supply of labour may remain

[9] Thus, the Chairman of the Transvaal and Orange Free State Chamber of Mines noted in 1955 that in 1949 "our gold producers received a higher price for their gold in terms of sterling. The leaders of the Gold Mining Industry . . . emphasized that, welcome as the relief to the Industry was, everything must be done to prevent rising working costs from absorbing the benefits of this relief. Yet, despite this warning, cost factors beyond the Industry's control absorbed these benefits all too soon and the Industry is again faced with the dilemma of rising costs against a fixed price for its product." (*Sixty-Sixth Annual Report, Year 1955*, pp. 57–58.)

[10] Silver is associated with gold to some degree in gold deposits and is a coproduct of gold-placer mining and lode-gold mining. Crude platinum is often present in gold placers; at some areas in Colombia, enough is present that it becomes a coproduct. Other platinum-group metals are present in very small quantities in some lode-gold ores. Uranium is present in small quantities in South African ores. Uranium and thorium bearing minerals are present in some placers. (Department of the Interior, Bureau of Mines, *Mineral Facts and Problems*, Bulletin 556, Washington, D.C., p. 5.)

larger than it would be in other occupations in the face of similar trends in production." [11]

In many countries, the conception of a cost-price relationship as applied to gold mining is more complicated than it would at first appear to be. Where gold production is a relatively small part of the total production in the economy, the gold industry must buy its labor and other production factors at market prices over which it has little or no influence. In such cases, it is likely to be treated uniformly with other comparable industries in regard to taxation, assessment for social benefits, etc. Under these conditions, the term "costs" has a fairly specific meaning which is related to the national structure of costs. This is the situation, for example, in the United States and Canada. However, where the gold mining industry is relatively important it will probably be singled out for special treatment. Costs may then contain important elements of profit sharing in the form of taxes, differential exchange rates, or the like. In addition, such elements may be made to bear differently upon domestically owned mines and upon foreign-owned ones. These elements can be and often are increased if production becomes more profitable; they can be decreased if it becomes less so. As Hardy stated in 1936 with respect to South Africa, "the present level of costs is shot through with items which really constitute a distribution of the net income of the industry . . . rather than the payments of costs that really have to be met in order to maintain a high level of output. . . . The costs which the industry has to incur in the period of its prosperity are not a good criterion of the necessary costs involved in keeping it going. . . ." [12]

The tax treatment of gold mines in South Africa illustrates three of the ways used by governments to take account of changing profitability: (1) adjusting the tax rates applicable to taxable income; (2) modifying the definition of taxable income; and (3) treating gold mines as a special class for tax purposes. As to the first, South Africa increased the tax burden of the gold mining industry by the Gold Mines Excess Profits Duty Act, 1933, which imposed a tax additional to the normal income tax on the difference between gold mining profits at the new price of $35 per ounce, established in that year, and the profits

[11] Report of the Committee of Inquiry, *op. cit.*, p. 44. As the South African Reserve Bank stated in 1953, ". . . a world recession or depression would benefit our gold mines by lowering their production costs, if not also by raising the price of their product, and to the extent that contraction and unemployment should take place in other local industries, the gold mines would be able to obtain more labour and power and thus to produce more in view of their substantial surplus productive capacity." (*Report of the Thirty-Third Ordinary General Meeting*, pp. 21–22.)

[12] C. O. Hardy, *op. cit.*, pp. 67–68.

that would have been received if the gold price had remained unchanged.[13] After sterling was devalued in 1949, the tax formula was changed in order to increase tax rates.[14] Later, as costs increased, the formula was changed from time to time to produce lower rates. Tax relief of the order of £700,000 was granted for 1956, equivalent to a reduction of 4¾ per cent for those mines paying the formula tax.[15] By 1956, South Africa had returned to the same tax schedule it had used prior to the devaluation of 1949.[16] The government revenue collected from the gold mining industry in recent years is shown in Table 3.

The second method of recognizing profitability is to vary the amounts and kinds of permissible deductions and the ways of meeting specific industry charges. Extended discussion of this highly technical subject is beyond the scope of this paper; however, it may be noted in passing that different kinds of mining are given special treatment in many countries, especially with respect to depletion. Nevertheless, two examples will illustrate the point. In South Africa, gold mines are not regarded as having any taxable income until all capital expenditures to bring a mine to production have been written off. This provision was recently extended by a special concession for new deep-level mines, which may have unusually long preproduction periods. Their permissible write-off consists not only of the capital invested but, in addition, of an amount equal to 5 per cent per year compound interest on the balance to be charged off.[17] The taxation liabilities of gold mines were also affected by the responsibility accepted in 1956 by the South African Government for the payment of about £500,000 a year for 30 years in connection with silicosis legislation.[18]

The third method, i.e., to treat gold mines as a special class for tax purposes, is perhaps the most important. The tax rate applicable to each gold mine is determined by a general formula applicable solely to gold mines. The tax rate for each mine depends upon its own ratio of taxable income to gross income. The more profitable the mine, the higher the applicable tax rate. In contrast, the tax rates imposed on other kinds of mines, and on nonmining enterprises, do not depend upon the profitableness of the enterprise; for each type of mine, and for non-

[13] John W. Shilling, "An Outline of Gold Mining Taxation, *South African Law Journal* (Cape Town and Johannesburg), May 1950, p. 152.

[14] Bureau of Census and Statistics, *Official Yearbook of the Union of South Africa* (Pretoria), No. 27 (1952–53), p. 605, and No. 28 (1954–55), pp. 402–3.

[15] *The South African Mining and Engineering Journal*, May 11, 1956, p. 714, and May 25, 1956, p. 781.

[16] The nature of the tax formula and the tax rates resulting from it are discussed in footnote 19.

[17] *The South African Mining and Engineering Journal*, July 26, 1957, p. 1497.

[18] *Ibid.*, May 25, 1956, p. 781.

TABLE 3. GOLD PRODUCTION, WORKING PROFIT, AND GOVERNMENT REVENUE FROM GOLD MINING IN SOUTH AFRICA, 1946–56

(*In millions of South African pounds*)

Year	Gold Production	Working Profit	Government Revenue
1946	99.2	26.3	11.3
1947	92.7	21.4	6.2
1948	96.2	23.8	7.4
1949	110.6	33.9	11.9
1950	139.5	51.5	22.7
1951	137.5	44.2	22.9
1952	141.3	38.7	16.0
1953	142.2	34.9	12.4
1954	158.6	38.2	14.3
1955	177.4	44.3	16.9
1956	193.2	48.4	17.0

Sources: Transvaal and Orange Free State Chamber of Mines, *Sixty-Sixth Annual Report, Year 1955* (Johannesburg), pp. 72–73, and *Sixty-Seventh Annual Report, Year 1956*, pp. 80–81 and 93.

mining enterprise in general, there is a separate, uniform tax rate. The tax rates applicable to the more profitable gold mining companies are higher than those applicable to other companies, mining or nonmining; on the other hand, the situation may be the reverse for the least profitable companies.[19] For a rich mine, i.e., one with a high proportion of net

[19] The tax formula is of the type $y = a - b/x$, where a and b are constants and x is "the ratio, expressed as a percentage, which taxable income derived from mining for gold bears to the income derived therefrom." The formula for 1956 is $y = 60 - 360/x$. With these formula constants, the rate applied to all the taxable income of a company whose ratio of net to gross is 30 per cent will be 60 – 360/30, or 48 per cent. The rates of income tax as the formula constants were changed from time to time are shown below, and applicable tax rates for other kinds of business enterprises are shown for comparison.

	1946	1947	1948	1951	1956
			(*per cent*)		
Mining					
Gold, with recovery ratios of					
10%	28	25	24	25	24
20	49	44	42	44	42
30	56	50	48	50	48
40	59	54	51	54	51
50	62	55	53	55	53
60	63	57	54	57	54
Minimum	15	15	15	20	20
Diamonds	22½	22½	22½	40	45
All other	20	20	20	27½	30
All nonmining	20	20	20	22½	25

The minimum of 15 per cent shown in the above tabulation was applied to mines with profits of £7,500 and more per year; that of 20 per cent, to those with

to gross income, the income tax plus profit sharing may come to as much as two thirds of net income.[20] The emergence of uranium as a by-product, or as a coproduct, may raise some interesting questions with respect to taxing gold mines.[21]

There have been complaints for many years in South Africa that the taxation of gold mines is discriminatory and unduly burdensome. It has also been argued that "graduated tax rates may justifiably be applied to the incomes of individuals but it is difficult to defend their application to the incomes of public companies, whose shareholders include both rich and poor individuals."[22] In a recent defense of the tax system, the Government pointed out that the taxing formula had been devised by the Gold Mining Taxation Commission in 1945, that the results achieved by the formula were just, and that low profit mines did not have to pay tax.[23]

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profits of £20,000 and more. Below these profits, i.e., for small or unprofitable mines, the formula is applied but a maximum tax rate is specified.

Gold mines in South Africa are subject to a number of other payments, including one equivalent to a royalty or leasehold payment. This has been in effect for many years. The payment rates are determined separately for each mine on the basis of the same type of formula that is used in determining income tax rates. The leasehold payments formula is negotiated at the time the mine begins operations. The constants in the formula are such that, for many years, royalty payments have been substantially smaller than income tax payments. Such payments are apparently considered as a cost in determining taxable net income. In the case of the proposed Western Deep Levels, Ltd., the leasehold formula is $y=15-90/x$. If the ratio of net to gross income should be (say) 50 per cent, the leasehold payment would be 13.2 per cent of net income before income tax. (The system of leasing gold areas is described in the *Official Yearbooks of the Union of South Africa;* see No. 28, 1954–55, pp. 583–85.)

[20] Anglo American Corporation of South Africa Limited, *Chairman's Statement, 1957* (Johannesburg, 1957), p. 11.

[21] The income derived from mining gold includes, by statutory definition, income derived from silver, osmiridium, or other minerals which may be won in the course of mining gold, or which result directly from mining gold. In recent years, the most important other mineral has come to be uranium; and about half the gold in South Africa comes from gold-uranium producers. Should profits from uranium, when this is the dominant product, or a major coproduct, be taxed at the gold mines rate, or at the rate for base metals mines? Apparently, in one recent case, uranium profits from a gold mine whose gold deposits had become uneconomic were taxed at the base metals rate of 30 per cent.

[22] South Africa Social and Economic Planning Council, *Economic Aspects of the Gold Mining Industry,* Report No. 11 (Pretoria, 1948), pp. 12 and 40. For selected references to the element of discrimination, see *First Report of the Committee of Enquiry Into the Income Tax Act* (Pretoria, 1951), and the review of this report by J. Lavine, "Some Aspects of Enquiry Into Income Tax Act," *South African Journal of Economics* (Johannesburg), June 1952, especially pp. 138–39. Also, *Report of the Committee on Gold Mining Taxation,* which notes "the long-standing practice of taxing gold mining companies at a higher rate than other companies" and considers it justified (Pretoria, 1945, par. 111; see also pars. 125–37). An older but very interesting discussion is in W. J. Busschau, *The Theory of Gold Supply* (Oxford, 1936), especially Chaps. VI and VII.

[23] See comments by the Minister of Finance reported in *The South African Mining and Engineering Journal,* May 25, 1956, p. 781. The Minister stated

This brief survey of some of the outstanding economic problems of gold mining suggests that the industry operates subject to a number of special factors. There is little doubt that an increase in the price of gold would, after a time, and to a greater or lesser extent, increase the production of gold. But since it is assumed that the price of $35 per ounce will not be increased, the only question with which this paper is concerned is what the course of gold production is likely to be if the price continues unchanged and there is no serious depression. A closer examination of the situation in the major producing countries will help to answer this question.

Union of South Africa

The Union of South Africa in 1957 was responsible for 58 per cent of the gold production of the world, excluding countries in the Soviet bloc. It is the only country that in recent years has benefited by the discovery of substantial new gold fields. It is likely in the next decade to be the major determinant of the world level of gold production. Within South Africa, the production of the newer mines, principally in the Orange Free State, will continue to increase for some time. The future course of South African production appears to depend, first, on the extent of this increase and, second, on the prospects of production from the older mines. The following points bear on this question:

1. The ultimate capacity of the newer mines "is still unknown. It depends partly on geological factors, of which the amount of the accumulated water still under the ground and the amount of faulting are the most obvious." [24] Many of the newer mines are not yet at capacity production, and it has been estimated that the monthly milling rate of the existing Orange Free State mines will rise over the next few years to more than twice the rate attained at the end of 1955.[25] In addition,

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that, of the 46 mines quoted on the Johannesburg Stock Exchange, 21 paid a tax on profits and 25 did not. The *Report of the Committee on Gold Mining Taxation* (*op. cit.*, par. 163) said that "the ratio of profit to recovery is the sound basis for a sliding scale. . . . It is the rich mines which should contribute most, not only to the normal cost of governmental services, but also to the replacement in more permanent form of the country's patrimony which is gradually being exhausted."

[24] *The Economist*, June 9, 1956, p. 1011. This point was strongly underscored when a new mine that started operations in March 1956 suspended operations seven months later because of flooding. Operations had not been resumed in November 1957.

[25] Anglo American Corporation of South Africa, *op. cit.*, p. 19. Also reported in *The Economist*, June 9, 1956, p. 1010, and *Barron's* (New York), June 11, 1956, p. 9. *The South African Mining and Engineering Journal*, March 30, 1956, p. 415, reported that 19 new mines, all either milling or due to start in 1956, were milling 1.1 million tons per month, compared with an expected maximum of 2.4 million. The Standard Bank of South Africa reported that "there has been a sharp

the gold content of milled ore has been improving and is likely to continue to improve.[26] The increase in the milling rate, in combination with an improvement in the grade of ore, would suggest a peak output of about 5–6 million ounces from the new mines already in production in the Orange Free State, compared with 3.8 million ounces in 1957. In addition, several new mines are being brought to the stage of production, and others are in a more or less advanced planning stage.[27]

2. Output on the Witwatersrand, comprising the remainder of South African production, declined in the decade which followed the record year of 1941, but it has been increasing since 1953. The 1957 output was 5 per cent greater than in 1956 and was exceeded in only a few earlier years.[28] The increases in an area where output was for some time declining have been brought about mainly by the contribution of new producers and the concentration on mining richer grades of ore.[29]

3. Uranium has become an important by-product of the gold mining industry, and it provides a substantial support for gold production. The extent of this support is suggested by figures on the distribution between the two metals of the working profits for all mines.[30] These

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rise in production in the Orange Free State, and it would appear that the limit of the upsurge is still far distant" (*The Standard Bank Review*, London, September 1956, p. 12).

[26] Data compiled from *The Standard Bank Review*, March 1957 and September 1957, and from *Barron's*, June 11, 1956, p. 24, indicate the following changes:

	1954	1955	1956	1st Half 1956	1st Half 1957
Ore milled (million tons)	4.4	7.2	9.4	4.5	4.8
Yield (dwts. per ton)	4.9	6.1	6.7	6.5	7.4
Gold output (thousand fine ounces)	1.1	2.2	3.2	1.5	1.8

[27] Certainly the most dramatic prospect announced to date concerns the proposed Western Deep Levels, Ltd. According to the announcement, the mine will have a capacity output of 1,440,000 ounces (about $50 million) per year, or more than 8 per cent of present South African output. It is expected that the life of the mine will be unusually long, about 60 years. (*The South African Mining and Engineering Journal*, August 2, 1957, pp. 1504–5; *The Economist*, July 27, 1957, pp. 336–37; Anglo American Corporation of South Africa, *Chairman's Statement, 1957*, p. 6.)

[28] Output declined from 13.8 million ounces in 1941 to 11.0 million ounces in 1953. It thereafter increased gradually to 12.8 million ounces in 1957.

[29] *The Standard Bank Review*, February 1956, p. 13.

[30] The following figures have been compiled from data of the Transvaal and Orange Free State Chamber of Mines, published in *Annual Reports*, 1954–56, and *Summary*, Third Quarter of 1957.

	1954	1955	1956	3rd Quarter 1957
Total profits (million South African pounds)	46.3	61.8	73.1	24.2
From gold	*38.2*	*44.2*	*48.4*	*15.5*
From uranium	*8.1*	*17.6*	*24.7*	*8.7*
Per cent from uranium	17	28	34	36

figures show that the percentage of total profits that was due to uranium increased from 17 in 1954 to 36 in the third quarter of 1957.

The importance of uranium to gold mining is even greater than the figures suggest. As of December 1957, 22 of the 53 operating gold mines were combined gold and uranium producers, and it is expected that this number will increase to more than 30. These combined producers were responsible for one half of the gold output in South Africa. About half the working profits of these producers came from gold, and the other half came from uranium, based upon operating results for 1956 and the first nine months of 1957. These data have two interesting aspects. First, though a few mines can produce uranium without producing gold, i.e., by reworking the tailings from which gold has been extracted, none of the newer mines can do this, since they produce uranium from newly mined ore. Uranium production is covered by long-term contracts. These provide for complete amortization of processing facilities during the lifetime of the contracts. Second, in interpreting these profits data it must be kept in mind that, for costing purposes, uranium is treated as a by-product, and all costs of mining and treating the ore until after the gold has been extracted are charged to gold. Uranium is charged only with the direct costs of processing the tailings.[31] With such cost allocation, gold might economically be produced at a loss. Indeed, in the third quarter of 1957, 6 combination mines showed a loss on gold. In any event, production of the two metals can be mutually supporting as long as the profits from both are adequate. And a change in the tax system, which would apply different rates to uranium and gold, now under discussion, might make net profits after tax larger.[32]

4. There is no reason to believe that the process of shutting down older and less efficient mines will not continue. Some mines will close because their ore is almost exhausted. Neither an increase in the price of gold nor a decrease in working costs can materially affect this. Other

[31] "The extraction of uranium in South Africa is at present conducted as a by-product of gold mining, for the concentration of uranium in gold-bearing ore is low and the most economic way to produce it is to have gold bear the cost of crushing and mining the ore." (Naomi Eliovson and Beelah Eliovson Long, *Industrial South Africa,* Johannesburg, 1956, p. 27.) An article, "Yardsticks for Uranium Shares," in *The Economist,* January 19, 1957, p. 231, noted that "with those qualifications the profit per ton, even after amortisation of the plant, is high—comfortably over £1 10s. per pound of oxide. It is doubtless that margin of safety plus the fact that uranium is a by-product with few direct mining costs of its own that gives the directors the courage to forecast a continued market for South African uranium when the industry, with its plant written down to nothing but without a guaranteed market, has to go out and find a buyer." This procedure for allocating cost can, of course, be modified depending upon the relative profitability of gold and uranium. This might have the effect of reducing the calculated cost of producing gold.

[32] *The South African Mining and Engineering Journal,* June 14, 1957, p. 1145.

mines with low-grade ore and narrow profit margins will be seriously affected by rising costs. Although some of these mines will be able to postpone closing by operating more efficiently and by concentrating on better yielding ores, others will undoubtedly have to close.[33] In June 1957, the President of the Chamber of Mines put the problem in the following perspective: [34]

> Of the 56 mines in production in 1956, 18 had been in production for 30 years or more and in no fewer than nine of them, production began in the last century and has been maintained for some 60 years. This is a remarkable achievement. . . .
>
> The problem of the continued existence of these older mines, which are particularly vulnerable to a rise in working costs, has received a great deal of publicity in recent months. This has created the impression that the problem has suddenly arisen. Nothing could be further from the truth.

And he went on to say:

> . . . every mine inevitably reaches the stage when, under existing conditions, it can no longer work profitably. It is clearly not in the interests of shareholders that mining operations should be continued beyond this stage. When this stage is reached, the interests of shareholders are best served by closing the mine, selling the assets and making a return of capital which could be available for reinvestment in new and potentially more profitable mining ventures.
>
> Nor, indeed, is it in the interests of the country to continue, by one expedient or another, the production of gold by a mine that can no longer do so at a profit, if alternative employment is available for that mine's employees in profitable enterprises. There is also a real danger that whatever expedient is adopted may further prejudice the national economy by placing additional burdens on it. The problem we are faced with is essentially that of moving men from one job to another with as little disruption as possible.
>
> . . . We have expressed our willingness to assist the Government in attempting to arrive at a workable solution which might postpone for a period the inevitable closure of the present 'vulnerable mines,' while the newer mines are progressing towards full production. In the interests of shareholders and of the country generally, such postponement cannot be unduly prolonged and the main aim should be to encourage the establishment of new mines to replace those that must in any circumstances close, be it this year or in the years to come.

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[33] In any case, this would be the result of the normal mining practice of mining the average grade of ore reserves. When costs rise, ore which can no longer be mined economically is dropped from reserves. The average grade of ore reserves therefore rises, and the mine works toward this higher average. On the contrary, "In 1950 the higher price for gold enabled the industry to include a large amount of previously unpayable reef in its ore reserves, with a consequent reduction in the average grade of these reserves and, in conformity with the industry's practice of mining to the average value of payable ore available, the yield fell to 3.759 pennyweights per ton. This yield was maintained until 1952 when, owing mainly to the exclusion of marginal ore through increased costs, it began to rise." (Transvaal and Orange Free State Chamber of Mines, *The Mining Survey*, Johannesburg, September 1955, p. 28.)

It is generally considered that any gold mine is "vulnerable" to further increases in costs if its profit margin is less than 5s. 0d. per ton of ore milled. In June 1957 there were 14 mines in this position. (*The Standard Bank Review*, September 1957, pp. 12–13.)

[34] Transvaal and Orange Free State Chamber of Mines, *Annual Report, Year 1956*, pp. 56 and 58.

According to one estimate, shutdowns by marginal mines, plus shutdowns by those mines whose ores will become exhausted, could not affect more than 750,000 tons of mill throughput per month by 1960.[35] This would be equivalent to a maximum reduction of 1.8 million ounces of gold output per year. Such a reduction would be a net loss to the mines concerned, but not necessarily to total gold production in South Africa.

5. For many years, there has been a scarcity of all classes of mining labor. As a result, few mines have been able to mill at capacity in recent years. Thus, given present mining techniques, an increase in the total labor force is one condition for larger output; and this in turn would tend to reduce unit working costs. The prospects of remedying the state of affairs resulting from the over-all shortage of labor are problematical.[36] It is difficult to disagree with a 1956 analysis which concluded that "over the next five years, and probably for longer, the demand for labour on the gold mines of South Africa was likely to be uncomfortably in excess of supply." [37] It is, therefore, more important than ever to provide workers with more capital equipment, to develop more efficient operating methods, and to classify, train, and upgrade workers as effectively as possible. Considerable progress is being made along these lines. The introduction of new methods has increased the speed and reduced the cost of development. A great deal has been accomplished by applying modern techniques of aptitude testing, hir-

[35] *The South African Mining and Engineering Journal,* March 30, 1956.

[36] *The Standard Bank Review,* February 1956, p. 13. Another expression of this view is that "a shortage of manpower . . . has forced the industry to work below capacity and further increased the unit costs of production. This problem is not confined to gold-mining. It is a general industrial problem in South Africa but, as far as gold-mining is concerned, the effects of the shortage of trained men are aggravated by the expansion of operations being undertaken by the industry. There is also a shortage of Native labor, although recent action taken to meet this latter shortage has produced encouraging results." ("The Union of South Africa," *Statist,* London, February 1956, p. 16.)

[37] *The South African Mining and Engineering Journal,* March 30, 1956, p. 415. There is a discussion of labor efficiency and productivity in the issue of July 27, 1956, pp. 121 ff. The labor situation in South Africa is complex. More than 60 per cent of the native labor in 1956 came from neighboring countries; and these countries impose quotas on the number of laborers who can be recruited. Labor turnover is high, and this not only affects efficiency but also involves additional costs for recruiting, testing, training, and transportation. (South Africa Social and Economic Planning Council, *op. cit.,* pp. 25–34.) The dimensions of these problems are suggested by the fact that native laborers from outside South Africa are usually engaged for 12 months, after which they must return to their homes unless they are permitted to re-engage for further periods, usually not exceeding 6 months. The extent of native turnover is suggested by the fact that, although the average labor force in 1954 was less than 315,000, recruitment totaled 178,000 from the Union, Swaziland, Basutoland, and South Bechuanaland, and 125,500 from other areas. (*Official Yearbook of the Union of South Africa,* No. 28, 1954–55, pp. 571–72.)

ing, wage administration, and training. But, as has been noted by many observers, both inside and outside the industry, there is a limit to what can be done, because of the bounds imposed on the mining industry by law and by custom in the utilization of non-European labor.[38] Under these conditions, the transfer of labor from less to more productive workings is an important element in the expansion of South African gold production.

Native labor is apportioned by quota to the various mines on the basis of each mine's scheduled mill capacity and a number of other factors and variables. Transfer of labor thus implies a change of quotas. Making labor available for transfer involves reducing the scale of operation of some mines by concentrating on their richer ores, i.e., overmining. Since South Africa has enforced a general policy prohibiting overmining, on the ground that it involves a loss of the country's mineral resources, transfer of labor requires governmental as well as private action. Whether the national interest would be served by relaxing this policy depends upon the over-all scarcity of native labor and the extent to which this scarcity adversely affects the expansion of the newer and richer mines.[39]

6. Since the end of World War II, working costs per ton of ore have risen by 70 per cent, or from 26s. in 1946–47 to 43s. in 1956 and 44s. 5d. in the first quarter of 1957.[40] The sharp postwar increase in working costs appears even sharper in the perspective that working costs in 1946–47 were almost the same as they had been in 1920 and in 1902. Present costs are about 130 per cent higher than in 1934, when the price of gold was last increased.

Working revenue per ton has also increased in the postwar period. There was a large increase resulting from the currency devaluation of

[38] For example, the use of native labor in the mining industry is limited by law to unskilled work. (Transvaal and Orange Free State Chamber of Mines, *Annual Reports*, 1954, pp. 59–61; 1955, pp. 59–65; and 1956, p. 61.) A recent article stated that "racial and craft barriers, both formal and informal, are likely to be the chief obstacles to be overcome" in attaining greater mechanization and automation. (*The South African Mining and Engineering Journal*, December 28, 1956, p. 1107.)

[39] A recent article noted that "in practice the system undoubtedly results in the labour position being tighter at some mines than at others, and indeed there have recently been cases where one or two of the older mines have reported actual labour surpluses. However, in the long term these discrepancies get adjusted and there seems no reason to think that the quota system is giving any widespread dissatisfaction." However, "one or two [declining] mines are now trending towards a small scale basis of operation, and it might well be advantageous for others to do so. . . ." (*The South African Mining and Engineering Journal*, March 30, 1956, pp. 413 and 419.)

[40] The data in this subsection are from Transvaal and Orange Free State Chamber of Mines, *Annual Report, Year 1956*, and *First Quarterly Report, 1957*.

1949. Since 1950, working revenue has increased by 40 per cent (from 42s. 7d. to 60s. 8d.) by reason of the mining of richer ore.

In 1950, immediately after the devaluation, working profit per ton was 17s. 4d., the highest point in this century. It declined sharply in the next three years, and was 11s. 11d. in 1953. Since then the increasing number of new mines has raised the average working profit. In 1956 it was 14s. 6d., and in the first quarter of 1957 it was 16s. 0d. The latter margin was almost the same as it had been in 1902 (16s. 6d.), the second highest point in this century, and almost twice that in the late 1920's.[41]

There is a wide range in profit margins among mines. Those producing both gold and uranium averaged 24s. 7d. in the first quarter of 1957, and only one, an extremely small one, had a profit margin of less than 10s. per ton. On the other hand, the 33 straight gold producers averaged 11s. 2d.; 14 of these had a profit margin of 5s. or less per ton, and 4, of 5s. to 10s. Mines with a profit margin of 5s. or less presently contribute about 18 per cent of South African production, and those with a margin of 5s. to 10s., almost 7 per cent.

The considerations that have been described thus point to different directions in the future, and it is not easy to strike a balance among them. They appear to suggest a steadily rising South African output that by 1960–62 may reach perhaps 19–21 million ounces per year, valued at $660–730 million, compared with $596 million in 1957. However, estimates involving so many variables—economic, geologic, social, and political—can be subject to large margins of error and considerable differences of opinion. It is understandable that the official South African position, as stated in September 1956, was that "total production is likely to show an increase in 1957, but this is solely due to the expected large increase in the output of the new mines. The output of these new mines may also be sufficient to sustain total production, though probably at a slightly lower level, after 1957." [42]

United States

The value (at $35 per ounce) of gold production in the United States rose from $89 million in 1933 to $210 million in 1940; by 1951, however, it had fallen to $66 million. It has changed little since then, and in 1957 it was $64 million. In the process, many gold mines have ceased opera-

[41] In terms of dollars, the working profit margin is approximately the same now as it was in the second half of the 1920's, but only about 55 per cent of what it was in 1902. Adjusted for changes in both prices and the rate of exchange, the external purchasing power of the profit margin is now about half of what it was in the late 1920's and less than one fifth of what it was in 1902.

[42] See International Monetary Fund, *Summary Proceedings, op. cit.*, p. 64.

tion, but the major units have continued to produce gold. Some of these produce gold as a by-product. In 1953, for example, 31 per cent of all gold production was a by-product of large-scale mining of low-grade copper ore, and 8 per cent was a by-product of other types of base metal mining.[43] In general, 35–40 per cent of gold production in the United States depends upon the production of base metals, principally

TABLE 4. PRODUCTION, EARNINGS, AND DIVIDENDS OF THE HOMESTAKE MINING CO., 1925–56

(Production in thousands of ounces; earnings and dividends in millions of U.S. dollars)

Year	Production	Earnings	Dividends	Year	Production	Earnings	Dividends
1925	290	0.6	1.8	1940	540	6.1	9.0
1929	310	1.0	1.8	1941	560	5.7	9.0
1930	410	1.5	2.0	1946	300	2.4	2.8
1931	430	2.4	2.1	1947	393	2.6	4.0
1932	480	2.5	2.7	1948	361	2.4	4.0
1933	...	5.0	3.8	1949	447	2.9	4.5
1934	470	7.1	7.5	1950	549	3.7	5.5
1935	550	8.1	14.1	1951	441	2.1	4.3
1936	560	7.7	9.0	1952	467	1.8	3.7
1937	550	7.2	9.0	1953	520	1.8	4.0
1938	550	6.9	9.0	1954	524	1.7	4.0
1939	570	7.1	9.0	1955	515	1.9	4.0
				1956	553	2.2	4.0
				1957	555	2.2	4.0

Sources: Moody's Investors Service, *Moody's Manual of Investments, American and Foreign, Industrial Securities* (New York), and Standard & Poor's Corporation, *Standard Corporation Descriptions* (New York). Production data through 1946 were calculated from reported bullion receipts, except that 1933 data could not be so determined. Earnings are after percentage depletion.

copper. Though some of the remainder is associated with the production of silver or other metals, it may be considered, for the purposes of this paper, as depending upon the profitability of gold mining. This is the case, for example, with the largest mine in the United States, which produces about 28 per cent of total U.S. output. Output in 1957 for the Homestake Mine, the fifth largest in the world, was almost 555,000 ounces. This was the largest in any postwar year and may be compared with its highest figures of 570,000 ounces in 1939 and 560,000

[43] Department of the Interior, Bureau of Mines, *Minerals Yearbook 1953* (Washington), pp. 1–13; *Mineral Facts and Problems, op. cit.*, pp. 1–12; and preprint from *Minerals Yearbook, 1954*, p. 11.

ounces in 1936 and 1941. The output of recent years was achieved despite large increases in factor costs. Profits and dividends are substantially lower now than in the bonanza period 1934–41, but dividends in the postwar period have continued substantially unchanged, as indicated by the data in Table 4. The earnings shown in the table are after allowances have been made for percentage depletion; and these depletion allowances apply to a mine that has operated for more than 70 years and produced more than $400 million of gold. Whether or not such depletion is, in large part, more properly considered as tax exempt income, the company as a matter of policy has for many years paid dividends in excess of net income.

The record of the Homestake Mine makes clear that, at least under certain conditions, production can be maintained at high levels despite sharply increased factor costs which continue to increase. It is interesting to note that plans are going forward at Homestake for an expansion of production at deeper levels, and that these plans involve substantial additional investment.

While the United States produced $64 million, or 6 per cent, of the world's gold in 1957, there is no expectation that this amount will increase. If anything, output may decline somewhat.

Canada

Gold mining in Canada differs, or has differed, from that in the United States in two important respects. First, for half the period since 1934, or roughly during the years 1939–46 and 1949–51, the price of gold was higher in Canadian than in U.S. dollars, by reason of the discount on Canadian dollars. This further tended to stimulate gold production, as did some sales of gold at premium prices in the international market in the postwar period. Indeed, it has been argued that in retrospect the stimulation of the gold industry in the 1930's was uneconomic and that, by encouraging mines to enlarge their operations to work lower-grade ores, it increased costs of production.[44] Especially as regards lower grades of ores, this enlargement has become more burdensome with the increase of costs, the appearance of the premium on Canadian dollars, and lower premium prices in international markets. Since 1951 there has been a premium on Canadian dollars, so that the price of gold in Canadian dollars has been lower than it was in 1934. Secondly, unlike the United States, Canada has had a subsidy program since 1948. During the period 1948–55, the value of gold out-

[44] "Usually the mines cannot return to the former smaller-scale, higher-grade operations as carried on before 1934. The expansionary process cannot easily be reversed." (Report of the Committee of Inquiry, *op. cit.*, p. 16.)

put was $1,350 million. Subsidy payments during the period totaled almost $100 million, and thus increased the gross income from sales of newly mined gold by approximately 7½ per cent. Assistance costs in 1956 are estimated at $8.9 million, or 5.8 per cent of gold production of $154 million.[45] The Assistance Act has been extended through 1958.

The gold mines eligible for assistance produce more than 3 million ounces per year. With a gold price of $35 per ounce, and parity between the Canadian and U.S. dollars, their output would be valued at more than Can$105 million. During 1957 the exchange rate premium on Canadian dollars averaged about 4 per cent, so that the average price per ounce realized by Canadian producers was about Can$33.65. Their revenue was therefore about Can$4 million less than it would have been at dollar parity, and the loss of revenue is equal to about half their estimated assistance payments for the year.

As in the United States, some gold is produced as a by-product of base metals; about 13 per cent of gold production appears to be associated to a significant extent with the production of other metals. The great expansion of mining in Canada since the war has exerted a strong pull on available resources of labor and capital. Factor costs, including wages, have risen sharply in response to prosperity in general and the expansion of mining in particular.

Gold production has responded to these conflicting factors by holding its own, though the number of mines has fallen by one half since 1948. The value of production (at US$35 per ounce) rose from US$104 million in 1933 to US$187 million in 1940. In the eight years 1950–57 it was relatively stable, averaging US$155 million per year. Production is likely to continue at this level for some years, but if full employment and rising costs are assumed expansion is unlikely.

Other gold producing countries

South Africa, Canada, and the United States in 1957 produced gold valued at US$815 million. The value of output in all other countries was $205 million, with the largest amounts produced in the countries listed in Table 5. It is impossible to characterize, in a limited survey, the different production situations in these and other minor gold pro-

[45] *Northern Miner* (Toronto), June 14, 1956, August 29, 1957, and November 25, 1957. Selected data on the assistance program are as follows:

	1948	1954	1956
Number of mines	117	62	47
Production, all mines (mill. oz.)	3.5	4.4	4.4
Production, assisted mines (mill. oz.)	3.2	3.5	3.3
Production eligible for assistance (mill. oz.)	1.4	2.4	2.2
Assistance paid (mill. Can. dollars)	10.5	12.5	8.9 (est.)

TABLE 5. VALUE OF GOLD PRODUCTION IN SELECTED COUNTRIES, 1933–56

(Valued at US$35 per fine ounce; in millions of U.S. dollars)

	1933	1940	1948	1950	1955	1956	1957
Australia	29	58	31	30	37	36	38
Gold Coast	12[1]	33[1]	24	24	24	22	—
Rhodesia	23	29	18	18	18	19	19
Philippines	...[2]	...[2]	7	12	15	14	13
Belgian Congo	10	19	10	12	13	13	14
Colombia	10	22	12	13	13	15	11
Mexico	22	35	13	14	13	12	12
India	12	10	6	7	7	7	6

Sources: Data for 1933 and 1940 are based on figures in Board of Governors of the Federal Reserve System, *Banking and Monetary Statistics* (Washington, November 1943), Table 159. Data for 1948 and later years are from *International Financial Statistics* (Washington). Some of the data for 1957 are preliminary.

[1] Includes Nigeria and Sierra Leone.

[2] Not available.

ducing countries. Some have more or less extensive subsidies. Some permit producers to sell gold output in external premium markets. Some have domestic markets for gold which are insulated and where, in effect, local production may be sold above the world price. In the Philippines, for example, nonresident holders of blocked pesos may acquire dollar exchange by buying currently mined gold at the domestic free market price and selling it to the Central Bank at $35 per ounce. A number of countries have recognized that the payment of subsidies is an alternative to permission to sell at prices higher than the official price, so that a gold producer cannot be eligible for both. Some countries vary the share of profits that they obtain, and the profits that they permit gold mining companies to earn, through a multiple rate structure or differential taxation on the basis of size and ownership (domestic or foreign). In none of these countries is gold of major significance, either as a part of total production or of exports. Among the countries in the group, gold production is of greatest importance to the Gold Coast (Ghana), where it constituted 10 per cent of exports in 1956. In no other country (excluding South Africa) does gold constitute as much as 5 per cent of exports. Under these circumstances, the cost of subsidizing gold production can never be very large, while countries often consider that the advantages of continued production are great. These considerations, in the light of the conditions under which gold is produced, suggest that production is unlikely to fall below current levels.

OUTLOOK FOR GOLD PRODUCTION

In summary, the major determinant of changes in world gold production in the next decade is likely to be production in South Africa. If output there remains at present levels, and production in all other countries does not decrease, world production in the next decade is likely to be of the order of $1,050 million per year. If South African production increases significantly in the years to about 1961, and slowly thereafter, and production in other countries does not decrease, total production in the next decade is likely to average $1,150 million per year. An increase in South Africa and a decrease in the rest of the world are likely to result in an average production of at least $1 billion per year. A depression in this period would increase these figures.

Additions to Gold Reserves in the Past

The proportion of gold production that has gone into monetary gold stocks has varied considerably from year to year. The proportion in any one year is not very significant (and in any case is very difficult to measure accurately), but the average proportion added to monetary stocks over long periods has great significance for any study of gold reserves. For the period 1835–1952, it has been estimated that the increase in monetary gold was equivalent to 70 per cent of gold production.[46] During 1931–45, gold production was $14,455 million, and reported receipts of gold by monetary authorities from the U.S.S.R. were at least $365 million. Official gold reserves increased by $15,670 million, equivalent to 108 per cent of new production and 106 per cent of estimated new supplies. Thus, during this period there was a net outflow of gold from private channels of $850 million.[47]

The data for 1946–57 show that gold reserves increased then by $5.4 million, equivalent to 52 per cent of estimated production (Table 6).

[46] W. J. Busschau, "Some Notes on Gold Production and Stocks," *Shall We Return to the Gold Standard—Now?* (National Industrial Conference Board, New York, 1954), p. 163. Data for 1930–39 are given in his *The Measure of Gold* (Cape Town, 1949), p. 92.

Kitchin estimated that the addition to monetary stocks during the period 1835–1929 was equivalent to approximately 56 per cent of production, and that additions in selected subperiods were equivalent to the following percentages of production: 1835–89, 50 per cent; 1890–1929, 58 per cent; 1920–29, 54 per cent. Joseph Kitchin, *op. cit.*, p. 49. Data for the period 1930–52, given by Busschau, suggest that the increase of monetary gold was equivalent to 90 per cent of gold production, and that in the subperiod 1930–39 it was greater than gold production.

[47] "The Private Demand for Gold, 1931–53," *Federal Reserve Bulletin* (Washington), September 1954, p. 938.

TABLE 6. VALUE OF WORLD GOLD RESERVES AND PRODUCTION, EXCLUDING COUNTRIES IN SOVIET BLOC, 1945–56

(In millions of U.S. dollars)

Year	Gold Reserves		Gold Production[2]	Cumulative Additions to Gold Reserves Since 1945	Cumulative Production of Gold Since 1945
	At end of year[1]	Yearly additions			
1945	33,770	—	—	—	—
1946	34,120	350	752	350	752
1947	34,550	430	767	780	1,519
1948	34,930	380	785	1,160	2,304
1949	35,410	480	818	1,640	3,122
1950	35,810	400	846	2,040	3,968
1951	35,960	150	827	2,190	4,795
1952	36,260	300	852	2,490	5,647
1953	36,680	420	849	2,910	6,496
1954	37,340	660	897	3,570	7,393
1955	38,000	660	944	4,230	8,337
1956	38,490	490	980	4,720	9,317
1957	39,200	710	1,020	5,430	10,337

[1] Estimated world total, excluding the U.S.S.R. Source: *Federal Reserve Bulletin* (Washington).
[2] Source: *International Financial Statistics* (Washington).

Additions were particularly small in 1951 and 1952; for the two-year period, they were equivalent to slightly more than 25 per cent of production. In 1954 and 1955, however, they were equivalent to 70 per cent; in 1956, to 50 per cent; and in 1957 to at least 70 per cent.

It is not unreasonable, at least as a first approximation, to assume that in the next decade gold additions to monetary reserves may average from one half to two thirds of gold production. The percentage has rarely been less than 50 over any substantial period, and it may be two thirds, or more, under certain conditions, which it may be helpful to consider briefly.

The variability of additions to gold stocks, in any year or in comparatively short periods, depends very much more on demand than on supply factors. The variability of gold production (leaving aside trend) is not great. On the assumption that there is no net dishoarding of gold on private account, the only other short-term variable factor affecting supply is sales of gold by the U.S.S.R. These sales are unpredictable, and they have never been measured with any accuracy. Incomplete tabulations for 1931–43 show that gold shipments by the U.S.S.R. to official recipients, excluding sales in gold markets, averaged $70 million per year. Such shipments were equivalent to 7 per cent of average

annual world gold production.[48] Estimates of U.S.S.R. shipments in postwar years vary widely, and none can be accepted as authoritative. The estimates that have been published suggest that sales in some years were negligible; that in a number of years they were of the order of $150 million; and that in 1957 they reached a postwar high of about $250 million. Sales since 1950 have been much larger than in the years immediately following World War II. It is not unlikely that for the 12-year period 1946–57 they may have come to $900–1,300 million.[49] These figures are equivalent to 9–13 per cent of world gold production during the period.

Any forecast of gold sales by the U.S.S.R. in the next decade can be nothing but a guess, but such a guess would have to take account of these principal factors: (1) During the last 25 years, the U.S.S.R. has sold gold more or less continuously, but in differing amounts, to meet its trade deficit. (2) During the postwar period, the U.S.S.R. has commonly been considered the second largest producer of gold in the world. For the period ended 1956, its production, according to one estimate, was at least $150 million per year and was possibly $350 million; according to other estimates, its production was at least $420 million per year and was possibly $560 million. Estimates for 1957 are considerably higher; they place the U.S.S.R. production at $600 million, approximately the same as South Africa's output.[50] Its gold holdings may be $7 billion or more, and it cannot have any significant amount of short-term liabilities, as do the United States and the United Kingdom. Average yearly sales of $80–110 million per year (the average of the postwar period), or of $200 million per year (which may perhaps be the level of the last two years), would still permit a significant increase of

[48] *Ibid.*

[49] There have been many estimates of Soviet gold sales, of which only a few can be noted. Samuel Montagu and Co., Ltd. (London) discussed them in their *Annual Bullion Reviews* for 1953–56. The Bank for International Settlements reported various estimates in its *Twenty-Sixth Annual Report* (Basle, 1956). Franz Pick's estimates are published in a number of places, including the daily press.

[50] These estimates for the period ended 1956 are from *Northern Miner,* November 29, 1956, and *The Gold Mining Record* (London), January 1956, p. 21. Other estimates include those of Samuel Montagu & Co. of "probably more than 10 million ounces" (*Annual Bullion Review,* 1956), or $350 million, and a German estimate of 12 million ounces, or $420 million (*The Financial Times,* London, February 11, 1956). The figure of $420 million was also reported by the *South African Mining and Engineering Journal* (April 6, 1956, p. 469). *The Wall Street Journal* said that output was at least $450 million (New York, November 20, 1957). Samuel Montagu & Co. estimated production in 1957 at 17 million ounces, or almost $600 million. (*Annual Bullion Review,* 1957.)

Probably the last official Russian report of production was $190 million for 1937. As reported August 15, 1957, the new economic chief of the Yakut region declared that by 1960 he hoped to increase gold output sharply, mostly concentrated in the former Lena fields of Yakutsk. (*Northern Miner,* August 15, 1957.)

Soviet gold reserves. Gold has the advantage for the Soviet Union that it can be sold in large amounts at guaranteed prices, and that it can be produced by labor generated in large part by internal political conditions. Given the role of gold in the Soviet economy—a war chest and a way to pay for foreign goods—and the chronic shortages of goods, particularly producers' goods, there is little reason to expect Soviet sales to decrease. It is probably fair to say that the U.S.S.R. has seldom been able to buy as much from the West as it would have liked. (3) There are a number of factors that might lead to larger gold sales. A decrease in the tension between the Soviet bloc and the Western countries might make it possible for the Soviet Union to buy more of the goods it wants. An increase in the economic strains in the Soviet satellite states might make it necessary for the Soviet Union to finance larger imports for them. Increased economic aid to underdeveloped countries in which the U.S.S.R. wishes to play a larger role might make it necessary for the Soviet Union to finance imports of capital goods by these countries, some of which may have to come from the West. A stepping up of Soviet propaganda activities or subsidies might require selling more gold. None of these factors necessarily assumes any increased eagerness on the part of the West to increase trade with the U.S.S.R.

These considerations suggest that average sales of $100 million per year may not be unlikely in the next decade. Such a guess may well be too low. Sales of this magnitude would be lower than those in the past few years and, with allowance for changes in the prices of goods, much lower than in the 1930's.

The demand for gold flows from its three uses: for money, for industry and the arts, and as a vehicle for saving or "hoarding." Of these, in all probability, bona fide industrial and artistic demands are relatively the most stable. As shown in Table 7 (last column), net usage in the United States during the ten years 1946–55 averaged $80 million per year, but in four of these ten years it was less than $50 million per year.[51] The latter figure may be a better approximation of bona fide uses than the former, since it was hardly possible, given the active

[51] In contrast, estimates of the U.S. Bureau of the Mint indicate that during 1931–37 returns of scrap gold, etc., exceeded new issues for industrial purposes by $15 million per year. For the world as a whole, industrial consumption during that period was estimated at $566 million and returns from scrap at $799 million (*Federal Reserve Bulletin,* August 1937, p. 704). The South Africa Social and Economic Planning Council, (*op. cit.,* p. 42), citing the Bank for International Settlements, *Eighth Annual Report,* stated that "between 1931 and 1936, however, industrial consumption fluctuated between 2 and 4 million fine ounces annually . . . and the demand could usually be met by the return of coin and scrap gold." In the late 1920's, net industrial and artistic consumption was estimated at about $100 million per year ($165 million at $35 per ounce) by Loveday (League of Nations, *op. cit.,* p. 90).

TABLE 7. ISSUES OF GOLD FOR PRIVATE USE IN THE UNITED STATES, 1946–55

(In millions of U.S. dollars)

Year	Gross Issues	Returns of Scrap, Etc.	Net Issues
1946	200	46	154
1947	98	49	49
1948	90	45	45
1949	149	40	109
1950	135	37	98
1951	105	36	69
1952	127	31	96
1953	112	37	75
1954	78	34	44
1955	69	23	46

Sources: *Annual Reports of the Director of the Mint* (Washington).

premium gold markets in some years, to prevent all illegal attempts to acquire and export gold.[52] On the assumption that the United States accounted for perhaps two fifths of the gold used for world industrial and artistic purposes, world demand would be of the order of $125–200 million per year.[53] The expected growth of real income during the next decade should lead to some increase in this demand, but it is unlikely that this would be proportional to the growth of income. The increase is more likely to be of the magnitude of 3–5 per cent, implying

[52] For example, during periods of active gold buying for private use, there were reports from time to time of operations to smuggle gold out of the United States. The *New York Times*, September 30, 1951, reported that U.S. authorities had cracked a smuggling ring, consisting of 50–60 persons, engaged in shipping $100 million of gold a year to black markets in Uruguay, Tangier, Bombay, and Rotterdam. It had reported several cases of smuggling the year before (issues of September 26 and 28, 1950).

[53] There is one estimate that the prewar ratio was 50 per cent (*Federal Reserve Bulletin*, September 1954, p. 937). Estimates of world industrial uses for each year from 1947 through 1955, published by the Bank for International Settlements in its *Twenty-Sixth Annual Report*, show a range from $120 million in 1947 to $210 million in 1955, and an average of $170 million.

The U.S. Bureau of the Mint publishes data on consumption of gold for industrial and artistic purposes based on questionnaires to a large number of governments. The reported data admittedly reflect a wide range of definitions, methods of estimation, and accuracy. The data for 1953, one of the more complete recent years, show consumption of $165 million for 33 countries, of which the United States is charged with 45 per cent. (*Annual Report of the Director of the Mint for the Fiscal Year Ended June 30, 1955*, Washington, D.C., p. 110.) Corresponding data for 1955 show $180 million for 29 countries, with only 26 per cent attributed to the United States. (*Annual Report*, 1956, p. 84.) On the other hand, the data for 1952 show $160 million for 32 countries, with 60 per cent attributed to the United States. (*Annual Report*, 1954, p. 120.)

an average demand for industrial and artistic purposes in the next decade of $130–210 million per year.[54]

The most variable component in the demand for gold is for the purpose of saving or "hoarding." To some extent, this demand may be for jewelry or other fabricated gold products and thus be indistinguishable from bona fide industrial and artistic demands. It is difficult to measure with any accuracy the effect of saving or "hoarding" in any short period, and it is even more difficult to estimate its future course. This will depend largely upon the threats of war, with their effects upon prices and the stability of currencies; the prospects of monetary disorders (inflation and devaluation), if peace is maintained; the continuation of prosperity or the prospect of depression; the efforts of governments to eliminate, or at least prevent the growth of, private gold holdings; and such longer term factors as the spread of savings institutions and the tempo of development in underdeveloped countries.

On the whole, the period of the 1930's was one during which private holdings of gold were reduced, the reduction being considerable in the Middle East and the Far East. There was, however, some increase in European holdings.[55] In the postwar period, private holdings increased substantially: purchases in the Middle East and the Far East reconstituted holdings that had been reduced during the 1930's; those in Europe further increased private holdings there. It would appear that in the entire period 1931–53 private holdings in a few countries of Western Europe increased substantially.[56] In the last four or five years, the scale of hoarding appears to have been substantially lower than it was immediately after World War II and during the Korean war. It is perhaps not too hazardous to guess that in the postwar period the amount of gold that annually went into private hoards ranged from a low of about $200 million (1954–55) to a high of about $520 million (1951–52). For the 11 postwar years, the average was probably about $300 million per year.

The total amount of gold in private hoards is clearly very large. According to one estimate it is more than $12 billion, that is, approxi-

[54] Kitchin noted, in 1935, that industrial consumption of gold had not grown as rapidly as output of gold. (Article on "Gold," *Encyclopedia of the Social Sciences*, Vol. VI, 1935, p. 691.) The BIS estimates referred to above (footnote 53) show a small upward trend. All estimates must be qualified in the light of the great difficulties of definition and estimation.

[55] For example, an unpublished study by I. G. Patel shows liquidation of private holdings in India each year from 1931 through 1941, with the general conclusion that during the years studied, 1925–42, the demand for gold was highly responsive to changes in the relative price of gold.

[56] "The Private Demand for Gold," *Federal Reserve Bulletin*, September 1954, pp. 935 and 938, and an earlier article in the *Bulletin* of August 1937. There was a net increase of $2,350 million in private holdings, excluding those in Eastern

mately the same in value as world monetary holdings outside the United States and the U.S.S.R.[57]

Some of the private demand for gold must be regarded as normal, partly because it is a traditional form of saving and partly because many people are not accustomed to making any large use of savings institutions. This demand will continue. On the other hand, a substantial amount of the hoarding of the postwar period was associated with the hostilities in Korea, and the demand for gold from the mainland of China seems to have been sharply reduced.[58] The satisfaction of the private demand for gold in underdeveloped countries with important development programs, e.g., India, is unlikely to be facilitated, and it may be further restricted legally. The possibility of inflation in many countries, especially underdeveloped ones, encourages hoarding, regardless of whether this inflation results from unduly ambitious development programs, or from spending to cope with international uncertainties, or from other domestic programs inconsistent with price stability. In addition, the private demand for gold in some Western European countries is substantial, and it appears to vary with the degree of political uneasiness and the fears of inflation and devaluation.

A substantial private demand for gold must therefore be expected to continue. Most of this private demand is met by smuggling or by other activities which are legally frowned upon, but some of it is satisfied by purchases which are officially sanctioned.[59] It has been facilitated by private minting in Italy and official or "commercial" minting in

countries but including non-U.S. industrial uses. If these industrial uses were of the order of $900 million, i.e., the maximum it could have been in the United States, the net increase in Western European private holdings during 1931–53 was of the order of $1.5 billion.

[57] This estimate by Franz Pick distributes the estimated $12.4 billion of private hoards in 1957 by areas as follows (in billions): France, $3.9; other Europe, $1.8; Asia, $2.9; Africa, $1.4; Western Hemisphere, $1.6; all other, $0.8. (*Northern Miner*, November 14, 1957.)

[58] Information on the movement of gold into "hoards" is necessarily conjectural. The comments by Samuel Montagu & Co. in its *Annual Bullion Reviews* are of interest: In 1951, the principal consumer markets were on the European continent, "where the demand is stimulated by the recurrent fears of devaluation," and in the Far East, "where the demand is due in part to political fears connected with the Korean War" (*Review, 1951*, p. 6); in 1952, the main support of the free market demand was "the French hoarding demand," but the same year witnessed the "obituary of the former active Chinese gold markets whose insatiable demands only a few years ago forced the free market prices to over $50 per ounce" (*Review, 1952*, pp. 3–4); and in 1955, the purchases of gold for hoarding were over 9 million ounces ($315 million at mint prices), of which Europe took 5 million ("the greater part of this gold eventually found its way into France"), and the Middle East took 2 million, largely for Indian account (*Review, 1955*, p. 4).

[59] As to the latter, German banks in April 1957 started selling gold bars and coins to private individuals and others. The law permitting private purchase and ownership was one move to help absorb domestic purchasing power. Such sales in the past year are reported to total $100 million, and 90 per cent of the turnover

France, Austria, Switzerland, Germany, and the United Kingdom. On the whole, it does not appear unreasonable to suggest that the movement of gold into private hoards in the next decade might be no larger than in the past one ($300 million per year), and that it might indeed be smaller. The probable limits of such a movement would appear to be from $200 million to $450 million per year.

Expected Additions to Gold Reserves, 1956–65

The preceding discussion has made it clear that there can be no categorical answer to the question, What increase of monetary gold stocks may be expected in the next decade, on the assumption that the present official price of $35 per ounce is continued? The best that can be done is to determine a range within which the actual result is likely to fall.

Average annual production of gold in the next decade may be assumed to fall within the limits of $1,050 million and $1,150 million. Additions to gold reserves may be assumed to be equivalent, on the average, to from one half to two thirds of gold production.[60] These two sets of assumptions delimit the maximum and minimum additions to monetary gold stocks during the next decade as follows:

	Average Yearly Addition to Gold Reserves (million dollars)	
	Minimum	Maximum
Assumptions		
1. If average annual gold production is $1,050 million and		
a. One half is added to reserves	525	
b. Two thirds is added to reserves		700
2. If average annual gold production is $1,150 million and		
a. One half is added to reserves	575	
b. Two thirds is added to reserves		770

The minimum figure—$525 million per year— represents an increase of 22 per cent over the average annual additions to gold reserves, about $430 million, during 1946–56.

The question may also be approached by combining the individual demand and supply elements already described to yield a minimum-

was in coins. Coins sold at premiums ranging from 15 per cent to 50 per cent, depending upon their scarcity. Gold bars were reported as being sold close to their bullion value. There was also a gold sales tax of 4 per cent. (*The New York Times*, March 4, 1958.)

[60] It is interesting to note that the Gold Delegation in 1930 estimated the proportion of gold production that would be available for monetary purposes in 1930–32 at about 55 per cent. (League of Nations, *op. cit.*, p. 16.)

maximum range. This is done in the following summary, where values are stated as annual averages for the decade:

	Million Dollars
1. Production of gold	1,050–1,150
2. Sales of gold by U.S.S.R.	100
3. Total supply of gold	1,150–1,250
4. Industrial and artistic uses (net)	130– 210
5. Private demand for saving and "hoarding"	
Range	200– 450
Probable value	300

These figures add up to a minimum addition to monetary gold stocks of $500 million per year, and a maximum addition of $920 million per year. A probable value within this range would be of the order of $730 million, equivalent to about two thirds of gold production. Since average annual additions were $450 million in 1946–57, these figures for the next decade represent, as a minimum, an increase of 10 per cent over the past rate; as a maximum, a doubling of the past rate; and, as a probable value, an increase of 60 per cent over the past rate.[61]

At the end of 1957, gold reserves of all countries except the Soviet bloc were $37 billion; excluding the United States, they were $14 billion. Reserves of gold and official holdings of exchange (largely dollars and sterling) were, respectively, $53 billion and $30 billion. During the next decade, it may be expected that gold will increase by perhaps $7.3 billion, and that in any event the actual increase will fall within the range of $5.0 billion and $9.2 billion. These are equivalent to the following percentage increases in total country reserves during the decade:

	Gold	Gold and Foreign Exchange
Minimum basis	14	9
Maximum basis	25	17
Probable basis	20	14

If the assumption is made that U.S. gold reserves will not increase during the next decade—or that any increase will be matched by an increase in official dollar balances held abroad—the percentage increases in reserves of the rest of the world will be as follows:

	Gold	Gold and Foreign Exchange
Minimum basis	36	17
Maximum basis	66	31
Probable basis	52	24

[61] All of these estimates assume that the world will continue to increase its hoards of gold. If the course of events should bring greater confidence in the stability of prices and of exchange rates, gold hoardings might possibly be reduced in some years and gold reserves might grow by more than gold production. Furthermore, a serious depression would probably result in dishoarding of gold.

Exchange Depreciation, Financial Policy, and the Domestic Price Level

J. Marcus Fleming *

THE PRESENT PAPER constitutes the first part of a study designed to show the order of magnitude of the increases in domestic prices that will result, on specified assumptions regarding the relevant foreign trade elasticities and propensities, from exchange depreciation accompanied by appropriate financial policies. Exchange devaluation may be used to improve the balance of payments or to permit a relaxation of import restrictions. Only the former use is considered here, the latter being reserved for consideration in a later paper. It is assumed here that exchange depreciation is accompanied by a financial policy that leaves unchanged the level of aggregate employment. For the type of depreciation examined, such a policy is taken to be compatible with the maintenance of stability in the prices of home trade goods, although the prices of import and export goods will rise.

Several hypothetical cases are defined by assigning sets of numerical values to the relevant coefficients (Table 1); and illustrations are given of the price effects that will result in these cases from (1) an exchange depreciation of 10 per cent and (2) a depreciation leading to an improvement in the balance of trade equivalent to 5 per cent of national output (Table 2). For some of these cases, the extent to which the price level may be expected to rise after adjustments have been made to indirect taxes for the purpose of restoring budgetary equilibrium is indicated (Table 8). Finally, the effect on the price level of a defined tendency for wage rates to rise in response to, though to lesser extent than, increases in the cost of living is illustrated (Table 9). In general, it appears that, if an appropriate financial policy is pursued, and if a wage-price spiral can be prevented, price increases are likely to be fairly moderate relative to the improvement achieved in the balance of trade, although considerable differences exist in this respect between different cases.

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Consideration is also given to the magnitude of the disinflationary effort that will be required to implement the financial policy defined as appropriate. It is shown that domestic expenditure will usually, though not always, have to be reduced below its initial level (Table 3), and that in all cases official action tending to curtail expenditure by substantial amounts will be necessary (Table 4). It is argued that only a relatively minor part of this curtailment should fall on public and private consumption (Table 5); most of it should fall on public and private investment. A broad indication—on very uncertain assumptions—of the very considerable extent to which the money supply might have to be reduced is given for certain cases (Table 7).

Nature of the Problem and Assumptions

Countries with overvalued currencies are sometimes deterred from making appropriate adjustments of their exchange rates by the fear that depreciation might necessitate a substantial increase in prices on the domestic market, and that this, in turn, through its reaction on the cost of living, might provoke an upward spiral of wages and prices. The object of this paper is to inquire how far, on various assumptions, such fears may be justified. However, in order to treat the question fruitfully, it is necessary to give it a somewhat circumscribed interpretation. Undoubtedly, if exchange depreciation is not accompanied by appropriate financial policies, or if money wages move in a rigid proportion to the cost of living, domestic prices may in some cases rise *pari passu* with the domestic prices of foreign currencies, thereby stultifying the depreciation as a means of improving the balance of payments. But it is as unlikely as it is undesirable that the monetary authorities of the devaluing country should remain passive in the face of the monetary and financial consequences of depreciation, and it would be tedious to examine the effects of depreciation under all the conceivable permutations and combinations of domestic policy. Moreover, the price effects arising out of the existence of a link between money wages and the cost of living are dependent on the price effects that would emerge in the absence of this link; they are more conveniently discussed at a later stage in the argument. What will be attempted here, therefore, is to indicate (1) the price effects that may be expected, in the absence of a link between wages and the cost of living, if appropriate financial policies are pursued, (2) the nature and scope of the policies that may be required, and (3) additional complications introduced by any dependence of wages on the cost of living.

The answer to (1) will be affected crucially by the degree of flexibility displayed by wages (and other factor prices) in response to changes in demand and supply. If wages were sufficiently flexible, a proper financial policy might be one that maintained the stability of the domestic price level by bringing about such adjustment in the prices of domestic factors and products as might be required to offset the price changes directly associated with the devaluation, i.e., those affecting import and export goods. In this case, of course, the effect of the devaluation on the general level of prices would, by definition, be nil, and only part (2) of our inquiry would be significant. A still higher degree of factor price flexibility would, of course, do away with the need for an exchange rate adjustment; any necessary alignment of domestic and foreign cost and income levels could then be brought about exclusively through financial policy acting on the domestic price level.

In reality, wages usually show considerable flexibility in an upward direction and some flexibility in a downward direction. Under normal circumstances, in most countries, however, they are too "sticky" to permit a reduction of any size to be brought about through demand pressure without a disproportionate sacrifice of employment and output. It is true that if, prior to an exchange depreciation, prices have been rising fairly rapidly and wages lagging behind, so that profit margins are abnormally high, it may often be possible, by curtailing monetary demand, to slow down or arrest the inflation and to prevent wages—and, even more so, domestic product prices—from rising as much as they would otherwise have done, and that this can be done without giving rise, in the process, to any excessive amount of unemployment. But it is probably illogical to assume both that a financial policy of this sort would *not* be applied in the absence of devaluation and that it *would* be applied after a devaluation. It would therefore appear prudent to assume that, while the wages of any sector of the labor force for which there is an increasing demand are likely to rise, the wages of any sector of the labor force for which there is a declining demand are for practical purposes rigid, save where a substantial increase in unemployment is allowed to emerge.

A proper financial policy is conceived, in general terms, as one that allows no substantial increase in unemployment and, subject to this, prevents any unnecessary increase in prices. That is to say, the level of domestic demand will be kept as low as is compatible with an avoidance of substantial unemployment in those sectors of industry which are disfavored by depreciation, after account is taken of the transfer of labor to sectors favored by depreciation. The wider the range of indus-

tries relatively disfavored by demand, the smaller will be the increase in aggregate money demand for the country's products that will be necessary to prevent an increase in unemployment. Since, in this paper, the relatively disfavored sectors usually constitute a much larger proportion of total output than the relatively favored sectors, the assumption is made that a proper financial policy involves the avoidance of any increase in unemployment as a result of depreciation.

The type of exchange depreciation considered in the present paper is one that is not accompanied by any changes in the ad valorem level of import duties or in the severity [1] of import restrictions. Also, only uniform exchange rates are considered.

An attempt is made to calculate the magnitude of the effects on prices that would be expected from the type of depreciation which is being examined, under various assumptions as to the magnitude of certain basic parameters, viz., (1) the proportionate importance in the economy of sectors of output and demand that are particularly involved in foreign trade, (2) the elasticities of demand and supply for foreign trade goods with respect to (a) prices and (b) aggregate domestic expenditure.

For convenience, it is assumed that in the devaluing country—which we may term Country A—three clearly demarcated types of goods exist: export goods, import goods, and home trade goods. Export goods consist of goods actually exported (in volume q_{x1}) and of similar goods absorbed in A (q_{x2}). Import goods consist of goods actually imported (q_{m1}) and import-competing goods produced in A (q_{m2}). All export goods, whether consumed abroad or at home, have the same price in A (p_x); so have all import goods, whether produced abroad or at home (p_m); and so have all home trade goods (p_h).

The volume of A's exports is equal to A's output, *less* absorption, of export goods. The former is regarded as depending on the price of export goods relative to that of home trade goods in A; the latter, as depending both on this price ratio and on the level of aggregate domestic expenditure (S) deflated by the price of home trade goods in A. (Note that domestic expenditure is defined to include expenditure on imports and to exclude export receipts.)

Thus the volume of A's exports is taken as dependent on the price ratio and on deflated home expenditure. Similarly, the volume of A's imports is taken as dependent on the price of imports, relative to that of home trade goods, and on home expenditure, deflated by the price of home trade goods. These relationships give rise to four of the parame-

[1] The severity of import restrictions can be measured by the amount of the ad valorem import duty that would have an equally restrictive effect.

ters used in this study: ϵ_a, the elasticity of A's *net* supply of export goods with respect to the export price ratio; λ_x, the elasticity of A's demand for export goods with respect to deflated home expenditure; η_a, the elasticity of A's net demand for imports with respect to the import price ratio; and λ_m, the elasticity of A's demand for import goods with respect to deflated home expenditure. It is not found necessary in this paper to split up the elasticities of A's net demand for imports and net supply of exports into their component elasticities of demand for and supply of import goods and export goods, respectively.

The net demand in the outside world (non-A) for A's exports is regarded as determined solely by the world market price, in non-A currency, of A's exports: the assumption is that any responsive changes in non-A's own prices or expenditures are proportionately so small as to be negligible. Similarly, non-A's net supply of A's imports is treated as a function of the world market price, in non-A currency, of A's imports. (The world market price of A's exports is assumed to be equivalent to the price in A; the world market price of A's imports, however, will differ from the price in A to the extent of any import duties or any windfall profits arising from import restriction in A.) These relationships give rise to two elasticities: η_b, the price elasticity of non-A's net demand for A's exports, and ϵ_b, the price elasticity of non-A's net supply of A's imports.

In this study we have arbitrarily assumed different sets of numerical values for the parameters p_xq_{x1}, p_xq_{x2}, p_mq_{m1}, p_mq_{m2}, p_hq_h, η_a, η_b, ϵ_a, ϵ_b, λ_x, and λ_m, and we have calculated the price effects of a given devaluation for each set of parameter values. Some of the numerical values have been chosen in such a way as to illustrate the influence of the different parameters, and some in such a way as to reproduce the circumstances of different sorts of countries. In reality, of course, the economic system takes time to react to disturbing factors. The values that can realistically be assigned to these parameters for any particular country will be a function of the reaction time allowed. We have, in fact, had in mind a reaction time of one to two years and have therefore been exploring the "medium-term" effects of depreciation. But the formula evolved can easily be used to calculate either short-term or long-term effects, if suitable values are assigned to the coefficients.

A more troublesome difficulty is that it cannot be assumed that any values assigned to the parameters will hold true irrespective of the nature of the disturbance. In particular, if we are starting from full employment it cannot be assumed that demand and supply elasticities with respect to price will be the same for price increases as for price declines. But since the present paper is concerned solely with price increases, the problem is not of importance here.

Price Effects of Exchange Depreciation Prior to Fiscal Adjustments

The effects on the internal price level of an exchange depreciation in Country A which is not accompanied by any change in the ad valorem level of any import restriction will now be considered.[2] It is assumed that there are no export restrictions or subsidies and, for the time being, that no changes in indirect taxation accompany depreciation. Since, in the absence of unemployment, no decline will take place in domestic wage rates in any major sector of industry, depreciation is likely to be accompanied by some increase in A's over-all cost of absorption (i.e., the price level of goods domestically consumed or invested), owing to a rise in the domestic currency price of both import and export goods. The domestic price of import goods will rise because the foreign currency price at which other countries supply them cannot be expected to fall to the full extent of the devaluation and because the home supply of import substitutes is not completely elastic; and the price of export goods will rise because the cheapening of their foreign currency price will bring about an increase in foreign demand for A's exports impinging on a not completely elastic supply.

It is assumed that the price of home trade goods remains constant. This seems to be reasonably compatible with our assumption regarding financial policy, which is that total domestic demand will be controlled so as to prevent the emergence of any excess demand for labor in the home trade sector as labor is attracted from that sector to the foreign trade sector. Such a policy may well result in a slight net increase in wages even in the home trade sector; but since aggregate expenditure on home trade goods will have declined, there may be an associated decline in profit margins which will enable product prices to remain constant.

Although the prices of foreign trade goods will rise, they will not rise to the full extent of the devaluation. This is because (1) the decline in the demand for imports, which may be expected (in the absence of an increase in domestic expenditure) to result from their increased domestic price, will tend to bring down their supply price abroad in foreign currency, and (2) the increased supply of exports resulting from the rise in the domestic price will cause some fall in their foreign-currency demand price.

Broadly speaking, the extent to which an exchange depreciation of a given magnitude will raise the price of export goods will depend on

[2] That is, the ad valorem level of import duties, if these constitute the effective limitation on imports, or the ad valorem equivalent of quantitative restrictions, if these constitute the effective limitation.

the extent to which a decline in the foreign-currency price will evoke an additional net demand for such goods abroad, the extent to which a rise in the A-currency price will evoke an additional net supply of such goods in A, and the extent to which any change in aggregate expenditure in A will result in a change in home absorption of such goods. In other words, it will depend on the elasticity, with respect to price, of net demand abroad (η_b) and of net supply in A (ϵ_a), and on the marginal propensity to buy export goods in A ($q_{x2}\,\lambda_x$). Similarly, the extent to which a given depreciation will raise the price of import goods will depend on the price elasticities of net supply abroad (ϵ_b) and of net demand in A (η_a) and on the marginal propensity to buy import goods in A ($q_m\lambda_m$).[3] Since the prices of A's import goods and export goods will increase as a result of the depreciation, while the price of home market goods will remain constant, the extent of the rise in A's cost of absorption will be the greater, the greater the share of import goods and export goods, relative to home market goods, in A's total absorption.

As far as price elasticities are concerned, the rise in A's price level will be the smaller, the lower the elasticities abroad (η_b and ϵ_b) and the higher the elasticities at home (η_a and ϵ_a). High values of η_b and ϵ_b mean that a big increase in the net demand for A's exports, and a big reduction in the net supply of A's imports, will be generated abroad in response to any decline in their respective prices in terms of foreign currency, and this will naturally tend to raise the prices of export and import goods in A. Low elasticities abroad mean that this price-raising effect will be relatively weak. High elasticities at home mean that any increase in the price of export or import goods—consequent on a rise in the foreign net demand for them—will lead to a big increase in domestic supply and a big decline in domestic demand for these goods, which naturally tends to limit the rise in their price.

The elasticity of the net supply of exports in A will be the greater, the greater (1) the elasticities both of A's output and of its absorption of export goods and (2) the proportion of its output of these goods that is absorbed at home. The elasticity of A's net demand for imports will be the greater, the greater (1) the respective elasticities both of its output and of its absorption of import goods and (2) the proportion of its absorption of these goods that it produces at home. The analogous propositions hold true of the outside world in its trade with A.

[3] Since p_h, the price of home trade goods, is assumed to remain constant, it drops out of the definition of the various foreign trade elasticities in A. Thus η_a and ϵ_a become straightforward elasticities with respect to p_m and p_x respectively,

Since the outside world (non-A) will normally be much larger economically than A, the ratio of absorption to output will normally be nearer to unity in non-A than in A. Mainly for this reason, the foreign trade elasticities will normally be greater in non-A than in A; and when A's exchange rate depreciates, the average price of foreign trade goods in A will normally rise by more than half as much as the price of foreign currencies in A. Since, however, elasticities with respect to price are usually higher, save in the short run, than the corresponding demand elasticities for the product in question, and since the former tend to play a greater part, relative to the latter, in determining export than in determining import elasticities, there is a general tendency for export elasticities to be higher than import elasticities. From this it follows that export prices in A will normally rise less than import prices and may often rise less than half as much as the prices of foreign currencies in A. It would be expected that the larger the devaluing country, A, the higher would be its foreign trade elasticities, relative to those of the outside world, and the smaller the increase in prices of its foreign trade goods relative to the extent of the depreciation.

As regards the elasticities of domestic demand for, and output of, export and import goods, the elasticities of demand will vary with the extent to which individuals and firms are prepared, in their pattern of absorption, to replace these goods by home trade goods, as the prices of the former rise; such substitution will be the greater, the greater the similarity between foreign trade and home trade goods. The elasticities of home output of export and of import goods will be the greater, the greater the mobility of labor and other resources as between home trade industries, on the one hand, and those producing exportable and import-competing goods, on the other.

The influence exercised by the marginal propensities to purchase import and export goods out of home expenditure will make itself felt only to the extent that the pursuance of a proper financial policy requires some change in the aggregate level of home expenditure as exchange depreciation brings about an improvement in the balance of trade.

A distinction has to be drawn between the level of home expenditure in real and in money terms. If a country embarks on devaluation from an initial position of full employment, the observance of a proper financial policy is bound to require a significant reduction of home expenditure in real terms. Real home expenditure (absorption) is limited to that portion of real output plus real imports that is not used

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λ_x and λ_m likewise resolve into elasticities with respect to money expenditure in A. q_m is short for $q_{m1} + q_{m2}$.

for export. Since, under the conditions assumed here, devaluation cannot increase the volume of output, and since, if it is not completely nullified by a rise in domestic prices, it will entail an increase in real exports and a decline in real imports, there must be a corresponding decline in real absorption or home expenditure. Failure to bring about such a decline will lead to such a rise in domestic costs and prices as to frustrate the purpose of the devaluation.

Transposed into terms of money values, however, the argument is less straightforward. True, the value of home expenditure must, by definition, be equal to the value of output plus the value of imports less the value of exports. Again, exchange depreciation will normally—though not necessarily—lead to an increase in the value of exports less the value of imports, so that, if a proper financial policy had required that the value of output should remain constant, home expenditure would have had to fall by an amount equal to the increase in the value of exports less the value of imports.

For the value of output to remain constant, however, expenditure on home trade goods would have to decline to the full extent of the rise in the value of output of export goods and import-competing goods. This is more than is called for by a proper financial policy. Since wages in all trades are assumed to be inflexible in a downward direction, and since there is something less than full mobility of labor between home trade industries, on the one hand, and export and import-substitute industries, on the other, it follows that a decline in expenditure on home trade goods, even if balanced by an equivalent increase in demand for other products, is likely to give rise to unemployment. Some rise in the value of output will therefore be appropriate, and home expenditure will not be curtailed to the full extent of the improvement in the balance of trade. Indeed, if the foreign trade elasticities in A (η_a and ϵ_a) are too low, the rise of export and import prices may not only entail a rise, rather than a fall, in the proportion of home expenditure directed to foreign trade goods; it may even divert more of A's expenditure from home trade to foreign trade goods than it will attract resources from the home trade to the foreign trade industries. If this occurs, it will be necessary to increase rather than reduce home expenditure, thus further pushing up prices in the foreign trade sector.[4]

In most cases, however, it will be possible, without creating undue unemployment, to reduce home expenditure sufficiently to moderate significantly the pressure of demand and the rise in prices in the foreign trade sector. The reduction will be the greater, the higher are (1) the

[4] This will happen if $q_{m1}\,\eta_a + \frac{dp_x}{dp_m}\,q_{x1}\,\epsilon_a < q_m + \frac{dp_x}{dp_m}q_{x2}$.

foreign trade elasticities in A and non-A, (2) the expenditure elasticities of demand for import and export goods in A, and (3) the proportionate importance of import and export goods in A's domestic absorption. These are also conditions that normally tend to increase the effect of a given devaluation in improving the balance of trade.

It is not clear that a relatively large foreign trade sector in A will contribute to keeping down the rise in prices of import and export goods resulting from a given devaluation; while it will enhance the moderating effect of any decline in home expenditure, it will also tend to reduce A's price elasticities. But whatever may be the effect on the price of foreign trade goods, the effect on A's general price level, or cost of absorption, is unambiguous and important. Given the rise in the price of import and export goods, it is clear that the greater the share of these goods in total absorption, the greater will be the rise in the general price level.

The financial measures required to bring about an appropriate adjustment of domestic expenditure may include some adjustment in the rates of taxation on consumption or investment. A consideration of the price effects resulting from such adjustments will be postponed until financial policies have been considered.

The manner in which the various factors discussed above—other than the fiscal repercussions just mentioned—combine to determine the proportionate increase in the general price level associated with a given proportionate depreciation of the rate of exchange is described in algebraic terms in Part I and Part II(a) of the Appendix. Strictly speaking, the formula applies only to infinitesimally slight devaluations, but it gives an approximation to the correct results for moderate devaluations.

Nine cases are defined in Table 1, each characterized by a different combination of numerical values for the relevant parameters in A and non-A. For each case, the effect that an exchange depreciation of 10 per cent would have on prices of foreign trade goods, on the cost of absorption, and on the balance of trade are shown in Table 2. The meaning of the various symbols used in these tables are set forth below; the brief description given here of the elasticities is to be interpreted in the light of the fuller definitions given above.

η_a: price elasticity of net demand for imports in A
ϵ_a: price elasticity of net supply of exports in A
η_b: price elasticity of net demand for A's exports in non-A
ϵ_b: price elasticity of net supply of A's imports in non-A
λ_m: expenditure elasticity of demand for import goods in A
λ_x: expenditure elasticity of demand for export goods in A
$p_m q_{m1}$: initial ratio of value of imports to value of total output in A
$p_x q_{x1}$: initial ratio of value of exports to value of total output in A
$p_m q_{m2}$: initial ratio of value of output of import goods to value of total output in A

$p_x q_{x1}$: initial ratio of value of expenditure on export goods to value of total output in A
$p_h q_h$: initial ratio of value of output of home trade goods to value of total output in A
S: initial ratio of value of total expenditure to value of total output in A
Δp_m: percentage increase in the price of import goods in A
Δp_x: percentage increase in the price of export goods in A
ΔP: percentage increase in the cost of absorption in A
ΔB: increase in A's trade balance[5] (value of exports less value of imports at world market prices) as a percentage of initial level of value of total output
$\frac{dP}{dB}$: percentage rate at which A's cost of absorption rises as its balance of trade (as a percentage of value of output) improves
t: ratio of the internal to the external price of import goods in A (=1 + ad valorem equivalent of any import restriction in A)

TABLE 1. NUMERICAL VALUES ASSIGNED TO PARAMETERS IN VARIOUS CASES

	Cases										
	1	2	3	4	5	6	7	8	9	10	11
η_a	1	1	*.5*	1	1	1	1	.5	.5	1.5	1.5
ϵ_a	4	4	4	*2*	4	4	4	5	4	3	2
η_b	3	3	3	3	*.5*	3	3	2	2.5	3	5
ϵ_b	8	8	8	8	8	*4*	8	4	6	10	15
λ_m	1	*1.5*	1	1	1	1	1	1	1	1	1
λ_x	1	*1.5*	1	1	1	1	1	1	1	1	1
$p_m q_{m1}$	.3	.3	.3	.3	.3	.3	*.45*	.15	.6	.15	.6
$p_x q_{x1}$	.2	.2	.2	.2	.2	.2	*.3*	.1	.4	.1	.4
$p_m q_{m2}$	.1	.1	.1	.1	.1	.1	*.15*	.05	.1	.1	.1
$p_x q_{x2}$	.1	.1	.1	.1	.1	.1	*.15*	.2	.2	.1	.05
$p_h q_h$	.6	.6	.6	.6	.6	.6	*.4*	.65	.3	.7	.45
S	1.1	1.1	1.1	1.1	1.1	1.1	*1.15*	1.05	1.2	1.05	1.2

The first seven cases are defined so as to illustrate the direction and magnitude of the influence that the individual parameters exercise, in the event of exchange depreciation of the type under investigation, on prices, the balance of trade, etc. Case 1 is taken as the standard of comparison, and other cases differ from it only with respect to a single parameter or group of parameters. The parameter or group of parameters from which the numerical value in any particular case diverges from that of case 1 is indicated by italics.

Cases 1, 8, 9, 10, and 11 are supposed to be more or less realistic typical country cases. Case 8 is a large, and case 9 a small, industrial country; case 10 a large, and case 11 a small, primary producing country. Case 1 may be regarded as an "average" country. The choice of elasticities has been based on the following assumptions:

[5] Strictly speaking, the equivalent in A's currency of the increase in the foreign currency value of A's trade balance.

(1) Large countries tend to have higher foreign trade elasticities at home (η_a and ϵ_a) and tend to encounter lower foreign trade elasticities abroad (η_b and ϵ_b) than do small countries of the same type.

(2) Industrial countries tend to have a more elastic export supply than do primary producing countries of the same size; this is linked to the fact that home consumption of exportable goods tends to be more important in industrial than in primary producing countries.

(3) The demand for imports tends to be less elastic for industrial countries than for primary producing countries because of the higher proportion of necessary food and raw materials.

(4) Industrial countries tend to encounter a less elastic world demand for their exports than is encountered by primary producing countries; although the products of the industrial countries are of a less necessary type, they are more specialized and less easily substitutable for those of competing countries.

(5) Industrial countries tend to encounter a less elastic world supply of their imports than do primary producing countries, because both the supply and the demand for primary products abroad tend to be less elastic than for industrial goods.

In choosing the elasticities, some account—but not too much—has been taken of such estimates of these elasticities as have been calculated for particular countries by econometric methods. For export supply elasticities (ϵ_a and ϵ_b), such estimates are almost entirely lacking. Estimates for import demand elasticities (η_a and η_b) are available, but good reason exists for believing them to be highly uncertain and, in most cases, too low.

On the basis of the numerical values assigned to the parameters under the respective cases in Table 1, calculations have been made of the percentage changes in the prices of exports (p_x) and imports (p_m), the general price level or cost of absorption (P), and the balance of trade (B) that will result from a 10 per cent exchange depreciation in Country A.[6] The last has been calculated on the assumption of a degree of import restriction equivalent to an ad valorem import duty of 50 per cent.

Consider, first, cases 1 to 7. In consonance with the foregoing argument, the price level is seen to rise somewhat more steeply where, as in cases 3 and 4, the foreign trade elasticities in A are low, and to rise somewhat less where, as in case 2, the expenditure elasticities in A are high, or where, as in cases 5 and 6, the foreign trade elasticities in non-A are low. The fact that the price rise in case 5 is almost as great as in case 1 is because the decline in domestic expenditure (S) in case 5

[6] For details of these calculations, see Appendix, Part I, Part II(a), and Part II(b).

TABLE 2. EFFECTS OF SIMPLE EXCHANGE DEPRECIATION ON PRICES AND THE BALANCE OF TRADE OF THE DEPRECIATING COUNTRY

Case	Effects of a 10 Per Cent Depreciation				Percentage Rise in P Associated with an Improvement in Trade Balance Equal to 5 Per Cent of Value of Output ($t = 1.5$)
	Δp_x	Δp_m (*in per cent*)	ΔP	ΔB (*per cent of value of output;* $t = 1.5$)	
1	4.05	8.4	3.4	5.3	3.25
2	3.7	7.7	3.15	6.6	2.38
3	4.2	9.2	3.7	3.7	5.10
4	5.85	8.7	3.7	4.05	4.54
5	1.1	8.9	3.3	1.1	15.66
6	4.0	7.1	2.9	5.3	2.76
7	3.8	7.85	4.6	9.5	2.41
8	3.0	9.0	2.3	1.2	9.42
9	3.5	8.3	5.4	8.6	3.16
10	4.8	8.5	2.5	2.6	4.72
11	6.9	8.0	5.0	17.6	1.41

is much smaller than in case 1 so that the smaller rise in p_x is nearly offset by the greater rise in p_m. The most substantial price rise of all occurs in case 7, where it is due to the relatively large importance of foreign trade in the economy as a whole.

In regard to the special cases 8–11, the most important factor in determining the degree of price rise is clearly the size of the foreign trade sector—which varies inversely with the size of the country, but tends to be larger in industrial than in primary producing countries of a given size. This accounts for the relatively large price increases in 9 and 11 and the relatively small increases in 8 and 10. The increases in p_x are, as would be expected, greater for small countries 9 and 11 than for large countries 8 and 10, and greater for primary producers 10 and 11 than for industrial countries 8 and 9. More surprising are the results for import price: p_m rises more in the industrial than in the primary producing countries, and more in the large than in the small countries. The reason why p_m is shown as rising more in case 8 than in case 10, and in case 9 than in case 11, despite the fact that the foreign supply is assumed to be more elastic for the industrial imports of cases 10 and 11 than for the primary product imports of cases 8 and 9, is that the price elasticity of demand for imports is also assumed to be higher in the former than in the latter pair of cases. The reason why p_m rises more in case 8 than in case 9, and in case 10 than in case 11, is not connected with the size of the price elasticities at all; these would tend to lead to the opposite results. The reason lies in the fact that the proportionate decline in home expenditure is very much greater, and

in addition the proportion of this decline in expenditure that falls on foreign trade goods is much greater, in the small countries with a relatively large foreign trade sector (cases 9 and 11) than in cases 8 and 10.

Thus far, we have been concerned with the effect on prices of an exchange depreciation of a given magnitude. Fundamentally, however, what is important to governments in considering the advisability of an exchange rate adjustment is something else, namely, the effect on prices of whatever exchange depreciation is required to bring about a given improvement in the balance of payments in terms of foreign currency. When considered from this new angle, the relative price-raising effects of exchange depreciation in the different cases change quite appreciably.

Consider, first, the degree of improvement in A's trade balance,[7] measured relative to the value of A's output, that results, in the different cases, from a given percentage depreciation. The balance of trade effect of depreciation depends to some extent on the intensity of import restriction applied in A (even though, by the basic hypothesis in this paper, the severity of the restriction remains unchanged as the exchange rate falls). In Table 2, the degree of restriction has been assumed to be equivalent to an ad valorem import duty of 50 per cent. As will be seen from Table 2, the balance of trade effects vary far more widely, as between the various cases, than do the price effects. Over the range of parameter values considered here, the improvement in the balance of trade tends to be the greater, the higher are A's own foreign trade elasticities (including the expenditure elasticities of demand for foreign trade goods), and also the higher is the elasticity of net import demand in non-A. Where, as in many of the cases, A's net import elasticity (η_a) is unity, variations in non-A's net export elasticity have little effect on the balance of trade; but where, as in cases 3, 8, and 9, η_a is less than unity, the improvement in the balance will be the greater, the less elastic is non-A's net export elasticity. But the main factor in determining the effect on the balance of trade, measured as a proportion of the value of output, is simply the relative importance of the foreign trade sectors. This factor operated powerfully in cases 7, 9, and 11. The particularly small improvement in the balance of trade in case 5 is due to the low elasticity of net demand for A's exports abroad; and the particularly large improvement in case 11 is due to the combination of high foreign trade ratios and particularly high levels of η_a, η_b, and ϵ_b. An improvement in the trade balance amounting to 18 per cent of the

[7] Strictly speaking, the A-currency equivalent of the improvement in the foreign-currency trade balance.

value of output seems an extraordinary effect to achieve from a 10 per cent devaluation. It has to be borne in mind, however, that if an improvement of this order were brought about it would be extremely difficult to carry out a financial policy sufficiently disinflationary to fulfill the assumptions of the model by keeping the price level of home trade goods from rising. On the other hand, it should seldom be necessary to achieve an improvement of this order, and a country of this type should be able to rectify every normal disequilibrium with a relatively slight exchange depreciation.

As will be seen from the last column of Table 2, the proportionate rise of the cost of absorption associated with a given improvement in the trade balance is much less affected by the relative importance of the foreign trade sectors than is either the balance of trade effect or the price effect of depreciation, taken separately. As can be seen by comparing case 7 with case 1, however, high foreign trade ratios, being associated with high marginal propensities to buy foreign trade goods, tend somewhat to reduce the rise in *P;* a similar result is seen in case 2, where the expenditure elasticities of demand for foreign trade goods are high. The greatest price rise of all occurs in case 5, because of the low value of the elasticity of net demand abroad for A's exports. A low elasticity of net demand for imports in A (case 3) also makes for a high price rise, as does a low elasticity of net supply abroad for A's imports (case 4). The substantial price rise in case 8 (the large industrial country) is due to the low elasticities of net demand for imports both in A and in non-A. Here, however, it should be repeated that such a country may not often require a correction of its trade balance as large as 5 per cent of the value of its output. The very small price rise in case 11 is due to its high elasticities of net demand for imports in A and in non-A and to its high foreign trade ratios. In general, save in case 5, the price increases seem quite moderate in relation to the improvements in the balance of trade.

Financial Policies Required

If the price level is to rise as little, and the balance of trade is to improve as much, with a given devaluation, as indicated above, the aggregate level of domestic absorption will have to be so adjusted as to maintain constant prices and full employment without excess demand in the home trade goods industries. By definition, domestic expenditure, or the value of domestic absorption, is necessarily equal to the value of output less the balance of trade, all the component ele-

ments being valued at domestic prices, either net or gross of expenditure taxes. But the balance of trade at domestic prices consists of the balance of trade at world prices less the excess of the domestic over the world market value of imports.[8] It follows that the domestic expenditure (net of expenditure taxes) should decline with devaluation by the amount by which the balance of trade, at world market prices, tends to improve,[9] plus the extent to which the excess of the domestic over the world market value of imports tends to decline, less the extent to which the value of output, at factor cost, tends to rise, *when equilibrium as described above is maintained in the home trade goods industries.*

The magnitude of the appropriate changes in A's expenditure, the value of output, and the excess of the domestic over the world market value of imports associated with (1) a 10 per cent depreciation and (2) a depreciation resulting in a 5 per cent improvement in the trade balance, respectively, are shown for various selected cases in Table 3.[10]

Let ΔV stand for the percentage change in the value of output at factor cost,

ΔS for the change in domestic expenditure (net of tax) as a percentage of the initial value of output,

ΔR for the change in the excess of the domestic over the world market value of imports (expressed as a percentage of the value of output), and

ΔB, as in Table 2, for the change in the balance of trade at world market prices.

It will be seen that the appropriate level of domestic expenditure declines in all cases, save case 8. The increase in expenditure in that case is associated with the comparatively low elasticities of foreign net demand for A's exports and the resulting small influence of depreciation on the trade balance. The rise in export prices is so small in that case that not enough labor is attracted from industries producing home trade goods to compensate for the switch in demand from these industries to pay for higher priced imports. At the other extreme, the decline in domestic expenditure required for a 10 per cent depreciation

[8] Here the domestic value of imports is based on the domestic price before payment of any expenditure taxes but after payment of any import taxes.

[9] Strictly speaking, the improvement in the trade balance referred to here is the improvement in the domestic-currency trade balance, but since, with a degree of import restriction equivalent to 50 per cent ad valorem, we are in effect assuming that the balance of trade is initially in equilibrium, it can be interpreted also as the domestic-currency equivalent of the improvement in the foreign-currency balance; see Appendix, Part II(b), equation (30).

[10] The basic formulas underlying this calculation are found in Appendix, Part II(a), (b), (c), and (d).

TABLE 3. APPROPRIATE CHANGES IN VALUE OF OUTPUT AND IN DOMESTIC EXPENDITURE ASSOCIATED WITH EXCHANGE DEPRECIATION

(*Expressed in percentage of the value of output*)

Case	Resulting from a 10 Per Cent Depreciation				Resulting from a Depreciation That Improves the Balance of Trade by 5 Per Cent of the Value of Output		
	$-\Delta B$	ΔV	ΔR	ΔS	ΔV	ΔR	ΔS
			$t = 1.5$				
1	-5.3	2.05	-0.4	-3.7	1.95	-0.4	-3.5
8	-1.2	1.3	0.25	0.4	5.5	1.0	1.6
9	-8.6	2.9	-0.3	-6.05	1.7	-0.2	-3.5
10	-2.6	1.8	-0.3	-1.1	3.4	-0.6	-2.1
11	-17.6	3.9	-4.3	-18.0	1.1	-1.2	-5.0

in case 11 is enormous—18 per cent of the value of national output; this is associated with a very large improvement in the balance of trade and a considerable decline in the value of imports which, since the ad valorem severity of import restriction is constant, reduces the excess of the domestic over the world market value of imports. A decline in expenditure of this magnitude might well be impossible to achieve in practice. On the other hand, a 10 per cent depreciation may very well be unnecessary in such a case. As will be seen from the right hand side of the table, the decline in S required in connection with a given improvement in the balance of trade is not much greater in case 11 than in other cases.

The extent of the disinflation to be carried out by official action in the event of exchange depreciation, however, is not measured by the required decline in domestic expenditure alone; it must, in addition, suffice to counteract any increase in expenditure that may naturally tend to arise from the target improvement in the balance of trade, the increase in national income, etc., associated with the exchange depreciation.

In order to indicate the order of magnitude of the disinflationary effort that may be required in typical cases, an illustrative calculation is made below for case 1 on the assumption of a depreciation of 10 per cent and on stated assumptions regarding the magnitude of the relevant structural coefficients. These coefficients are chosen to fit the basic assumption that, initially, some 75 per cent of total absorption consists of private consumption, 15 per cent of public consumption, and 10 per cent of (net) investment. (All figures are expressed in percentages of the value of national output.)

(1) The required decline in domestic expenditure, net of consumption and investment taxes (S), is 3.66.

(2) If indirect taxes are assumed at 8 per cent on consumption and investment, the required decline in domestic expenditure at market prices is 3.95.

(3) Assume that half the margin between the domestic and the world price of imports accrues to importers as "windfall gains," that the transfer of interest on the national debt from government to individuals amounts to 5, and that all industry is in private hands. Then private incomes initially amount to 110. Assume that the income tax takes 8 per cent of this income, leaving a post-tax income of 101.2, of which 12 per cent is saved. Private consumption at market prices is thus, initially, 89.1. The rise in the cost of absorption, owing to devaluation, is 3.42 per cent. Therefore, if private consumption were to remain unchanged in real terms, it would have to increase in money terms by 3.05.

However, we shall assume that there is a marginal propensity to consume of 0.6, so that real private consumption declines by 60 per cent of the decline in real private incomes. Now the fall in the purchasing power of private incomes is 3.46;[11] but money incomes rise by 1.83,[12] which, less income tax, amounts to 1.68. Therefore, real private incomes fall by 1.78. If 60 per cent of this is subtracted from real private consumption, private consumption in money terms will rise by 1.98.[13]

(4) There appears to be no good reason why the remaining constituents in absorption—government absorption of goods and services and private investment—should not tend, in the first instance, to remain unchanged in real terms. For government absorption it is convenient to assume this as a starting point for estimating the degree of final disinflation that may be necessary. Moreover, since it is assumed that the volume of output is not affected by the devaluation and that the average price of output rises almost as much as the cost of investment goods, it seems plausible that the tendency, at constant interest rates, would be to maintain an unchanged volume of private investment. Since aggregate domestic expenditure at market prices was initially 118.9[14] and private consumption was assumed above to be 89.1, the remaining categories of expenditure accounted together for 29.7. If these tend to remain constant in real terms, money expenditure on these items will tend to rise by 1.02.

(5) When the results of (3) and (4) are added together, domestic

[11] 3.42 per cent of 101.2.

[12] $\Delta V - \frac{\Delta R}{2} = 2.05 - 0.22$.

[13] 3.05 – 1.07.

[14] 108 per cent of 110.

expenditure will tend to rise by some 3.00. When this is added to the required decline in expenditure given in (2) above, it appears that official action would be required to curtail domestic expenditure by some 6.95 at market prices. For the purpose of making a comparison with national output at factor cost, this should be netted of indirect taxes; when this is done, the curtailment required amounts to some 6.44 per cent of the value of national output.

It should be noted that the inflationary gap that has to be bridged by official action lies between the amount of the target improvement in the balance of trade (some 5.3 per cent of the value of output) and the amount of the required decline in real absorption (some 7.4 per cent of the value of output). This is no accident. The amount by which the required decline in real absorption exceeds the target improvement in the balance of trade corresponds to the decline in real national income.[15] The amount by which the required decline in real absorption exceeds the inflationary gap corresponds to the fall in real consumption resulting from the decline in real national income; and the amount by which the inflationary gap exceeds the target improvement in the balance of trade corresponds to the decline in real national savings resulting from the decline in real national income.

TABLE 4. CURTAILMENT OF DOMESTIC EXPENDITURE (NET OF TAX) TO BE BROUGHT ABOUT BY OFFICIAL POLICY

(In per cent of value of output at factor cost; $t = 1.5$)

Case	Resulting from a 10 Per Cent Depreciation	Resulting from a Depreciation That Improves the Balance of Trade by 5 Per Cent of the Value of Output
1	6.4	6.1
8	1.5	6.3
9	10.7	6.2
10	3.2	6.1
11	21.9	6.2

Table 4 shows the extent of the curtailment of expenditure to be brought about by official action for the cases presented in Table 3, on assumptions as to tax rates, transfer incomes, and consumption ratios that are similar to those made above for case 1.

For the various cases, it is clear that the differences in the extent of the deflationary effort required on the part of the authorities in connection with a 10 per cent devaluation are largely associated with differences in the size of the improvement achieved in the balance of

[15] See Appendix, Part II(f). The statement is strictly true only when the trade balance is initially equal to zero.

trade; for a given improvement in the latter, much the same effort is required (see Table 4, column 2). The slightly greater effort required to achieve a given improvement in the trade balance in case 8 is due to the big loss of real income arising out of a deterioration in the terms of trade; this is only partly offset by the relatively small loss of real income from reduced imports[16] and the relatively large spontaneous reduction in real absorption. In case 11, there is very little deterioration in the terms of trade; there is, however, a substantial loss of real income from a decline in imports and, since half of this falls, in the first instance, on state rather than private income, the spontaneous decline in real consumption is relatively small.

How much of the required curtailment of expenditure should fall on consumption and how much on investment? How much of the needed disinflation should be carried out by budgetary, and how much by monetary, policy? These questions are interrelated, for the view that is taken as to the appropriate change in public saving—the excess of current account receipts over current account expenditures in the public sector—will largely determine the answer to the first question, as well as affect the answer to the second.

Prima facie, there seems no very good reason why devaluation should affect the proportion of national income devoted to public saving. Although some important qualifications to this principle will be admitted later, let us adopt it for the present, with the additional simplifying assumption that the proportion of public saving deemed appropriate in Country A is zero and that a state of zero public saving—a balanced budget on current account—prevails in the predevaluation situation. On these assumptions, most of the required curtailment of expenditure will fall on investment. The position may, once more, be illustrated from case 1.

With A's exchange rate depreciating by 10 per cent, the budgetary implications are as follows:

(1) The decline in target domestic expenditure (prior to indirect taxation) amounts to 3.66. At a tax rate of 8 per cent, the corresponding fall in the yield of general indirect taxation will be 0.29. The yield of import taxation will decline by 0.22.[17] Target private income, however, will rise by 1.83; and at an 8 per cent tax rate, the income tax yield will increase by 0.15. Altogether, the tax revenue corresponding to target levels of consumption and private income will fall by 0.36.

[16] The adverse effects exercised by exchange depreciation on real national income arise, as can be seen from the Appendix, Part II(f), equation (38), from two factors: (1) a deterioration in the terms of trade, and (2) a decline in the volume of imports, the adverse influence of the latter being weighted by the margin between the domestic and the world market price of imports.

[17] 0.5 times ΔR.

(2) Initially, the tax revenue was 38.0, of which 8.8[18] was from general indirect taxation, 8.8[19] from indirect taxation on expenditure, and 5 from import duties; 5 was paid out in interest transfers, leaving 17.6 available to be spent on public consumption at market prices. With the rise in the cost of absorption, public expenditure for an unchanged volume of public consumption at market prices would therefore be 0.60.[20]

(3) From (1) and (2), the excess of public consumption over tax revenues corresponding to target levels of national income and expenditure would appear to be 0.96.

(4) Assume that real public consumption should be reduced in the same proportion as private. Since a reduction of 1.07 in real private consumption has been assumed above (page 306), the corresponding reduction in public consumption is 0.21.

(5) In order to restore a balanced budget on current account, the remaining gap of 0.75 will have to be eliminated by additional taxes and reductions in public consumption. In order to maintain proportionality between reductions in private and public consumption—and since only 60 per cent of any fall in private incomes will result in a fall in private consumption—it will be necessary to cut public consumption by a further 0.09 and to increase taxation by some 0.66.

(6) If the budget is balanced in this way, public consumption at market prices will have been curtailed by 0.30 and private consumption by 0.40,[21] making 0.70 in all. On a net-of-tax basis, this is equivalent to 0.65, against a total required curtailment of expenditure of 6.44. The remaining curtailment of expenditure, amounting to 5.79 per cent of the national output, will have to come from public or private investment.

(7) For an exchange depreciation that will lead to an improvement in the trade balance equal to 5 per cent of the value of output, the required curtailment of investment expenditure would be 5.49.

The results of similar calculations made for all the cases appearing in Table 4 are shown in Table 5.

The table shows certain variations among cases as to the extent to which mere restoration of budgetary balance will curtail consumption expenditure for a devaluation of a given balance of trade effect. In case 8 this curtailment is relatively small, because the tendency toward a budget deficit arising from the decline in import and expenditure taxes is relatively small; this again is due to the relatively low level of

[18] 0.8 times 110.
[19] 0.8 times 110.
[20] 3.42 per cent of 17.6.
[21] 0.6 times 0.66.

TABLE 5. CURTAILMENT OF VARIOUS CLASSES OF DOMESTIC EXPENDITURE (NET OF TAX) TO BE BROUGHT ABOUT BY OFFICIAL POLICY

(In per cent of value of output at factor cost)

Case	Resulting from a 10 Per Cent Depreciation		Resulting from a Depreciation That Improves the Balance of Trade by 5 Per Cent of the Value of Output	
	Consumption	Investment	Consumption	Investment
1	0.65	5.8	0.6	5.5
8	0.1	1.45	0.35	5.95
9	1.0	9.7	0.55	5.65
10	0.35	2.9	0.65	5.45
11	2.6	19.3	0.75	5.45

η_b, the elasticity of foreign demand for A's exports. On the other hand, the curtailment achieved by budgetary policy in case 11 is relatively large because of the relatively powerful tendency toward a decline in import and absorption taxes, owing to the high import demand elasticities abroad and at home and the high marginal propensity to import.

In all cases, much the largest part of the required curtailment of expenditure falls on investment. It should be remembered, however, that, from the standpoint of national wealth, the cut in home investment is largely compensated by the increased rate of accumulation—or reduced rate of loss—of net claims on the outside world and/or of metallic reserves, associated with the improvement in the balance of trade.

The proposition that much the greater part of the required curtailment of absorption should fall on investment is open to certain important qualifications, both of principle and of practice:

(1) The illustrative figures given in Table 5 are calculated on the assumption of unchanged interest rates. But for the required reduction in investment to be carried out, it will be necessary to raise interest rates, or, more precisely, to increase the scarcity of investible funds. This development may well evoke some increase in private savings and may even be held to justify an increase in the level of public savings, if any. To this extent an additional part—which is not, however, likely to be very large—of the burden of contraction will be transferred from investment to consumption.

(2) More important in practice is that, if an overrapid contraction of investment should seem likely to give rise to undue unemployment in capital goods industries—which may not be the industries particularly stimulated by the devaluation—there may be a case for temporarily raising the level of public savings by raising taxes and so spreading

over a wider industrial front the deflationary pressure involved in the decline in home absorption. The importance of this point will be appreciated when it is recalled that, in the foregoing discussion, it has been assumed that the amount of investment prior to the depreciation amounted to no more than 10.5–12 per cent, according to the case in question, of the value of national output. Thus, what is called for by Table 5, in the event of a depreciation that improves the balance of trade by 5 per cent of the value of output, is approximately a cutting in half of the pre-existing volume of investment. On the other hand, the need for a decline in home absorption will manifest itself only gradually as the devaluation gradually takes effect on the balance of trade.

(3) Finally, allowance has to be made for irrationality in the savings policy of governments. Although the level of public savings or dissavings should logically be determined in relation to national income, the level of private savings, and the scarcity of capital, it may often in fact be influenced by the possibility which an external deficit provides of obtaining real resources from abroad and thus financing a budget deficit without inflationary consequences. To the extent that the improvement in the balance of trade brought about through depreciation threatens to create an inflationary situation, governments may be disposed to increase public saving more than has been assumed in the foregoing discussion. Where, however, simultaneous but mutually independent decisions are taken to reduce an external deficit by depreciation and to cut a budget deficit deemed excessive in relation to national income, it would be wrong to impute to depreciation the cut in consumption involved in the latter decision.

If, nevertheless, we continue to assume, despite the foregoing considerations, that the curtailment of home absorption is to take the form, predominantly, of a curtailment of investment, its implementation will lie primarily in the sphere of monetary and credit policy rather than of budgetary policy. In countries where a large sector of investment is under the control of the public authorities, the state should be able by direct measures to influence the level of investment. Fiscal policy may be adjusted to reduce the incentive to invest. But, in the main, the task of influencing the level of private investment, and to a lesser extent public enterprise investment, is likely to fall on monetary policy, in the broad sense that includes government policy with respect to the composition of the national debt.

The object of monetary policy should be to keep the volume of money in circulation—including checking accounts and with due allowance for the existing volume of various types of quasi-money—at

a level which will so raise the price and scarcity of investible funds that the volume of investment will be curtailed to the extent required. This is likely, in most cases, to call for a considerable nonrecurrent reduction in the supply of money and a considerable permanent reduction in the rate of expansion of bank credit to domestic borrowers.

The need for money for transactions purposes may be assumed to depend primarily on the level of the value of output and, to a lesser extent, on that of domestic money expenditure. As we have already seen from Table 3, the value of output in A will usually rise somewhat because of the rise in the prices of import and export goods, although, because of weighting considerations, the proportionate increase in the value of output will not be precisely the same as the proportionate increase in the cost of absorption. On the other hand, since the improvement in the balance of trade (at domestic prices)[22] is larger than the rise in the value of output, the appropriate level of domestic expenditure will usually fall. It is probable that the transactions demand for money is influenced much more by the value of output than by domestic expenditure, since the need for business balances arises mainly from the flow of current account transactions, and the need for private balances from the flow of personal incomes rather than of consumption expenditure. An average of the changes in the volume of output and in domestic expenditure, in which the weight of the former is three times that of the latter, is given in Table 6 for the cases dealt with in Tables 3–5.

The figures given in Table 6 give a rough impression of the changes in the money supply that would be appropriate in the event of depreciation if no changes were to occur in the velocity of circulation of money. In truth, however, the velocity of circulation is likely to increase substantially as the increased scarcity of investible funds, necessary to induce the required curtailment of investment indicated in Table 5, induces firms and individuals to make a more economical use of money balances; it follows that the supply of money should be curtailed to a corresponding extent.

Let x stand for the proportional increase in the scarcity of investible funds (as measured by some composite rate of interest) that tends to bring about a unit proportional decline in real investment (assuming the effect on consumption to be negligible) when real output remains unchanged; and let y stand for the proportional increase in the velocity of circulation that tends to result from a unit proportional increase in the rate of interest. Then a given proportional decline in investment

[22] That is, the improvement, in A currency, in the balance of trade less the excess of the home market over the world market value of imports.

TABLE 6. WEIGHTED MEAN $\left(\frac{3\Delta O + \Delta S}{4}\right)$ OF THE APPROPRIATE CHANGES IN VALUE OF OUTPUT AND IN DOMESTIC EXPENDITURE ASSOCIATED WITH EXCHANGE DEPRECIATION

(Expressed in per cent of value of output; $t = 1.5$)

Case	Resulting from a 10 Per Cent Depreciation	Resulting from a Depreciation That Improves the Balance of Trade by 5 Per Cent of the Value of Output
1	0.6	0.6
8	1.1	4.5
9	0.7	0.4
10	1.1	2.0
11	−1.6	−0.4

will be associated with a proportional increase, xy times as great as itself, in velocity. But the proportional increase in velocity is, by definition, the excess of the proportional increase in the value of transactions (however defined) over the proportional increase in the money supply. It follows that the proportional decline in the money supply that is required can be measured by xy times the proportional target decline in investment less the proportional target increase in the value of transactions—as shown in Table 6.

But what is x? And what is y? Unfortunately, the available evidence as to the magnitude of these coefficients in typical cases shows a wide range of variation. Thus, an empirical study of the response of velocity to variations in interest rates in various countries over various periods shows values for y (the interest elasticity of demand for money) which vary from 0.1 for the United States in the 1930's to 3.9 for the Netherlands in postwar years.[23] Most of the more reliable results, however, show an elasticity of less than 2, especially in industrial countries. While y would be expected to rise as the rate of interest (r) itself approaches zero, there is no reason to expect any systematic relationship between y and r for normal variations of r, and none is visible in the data.

About $\frac{1}{x}$, the (negative) elasticity of investment with respect to the rate of interest, even less is known than about y. A series of estimates for various countries relating to the interwar period and the period before World War I show that a 1 per cent variation in long-term interest rates tends to bring about a variation in gross investment (or other

[23] From an unpublished study by William H. White.

series related thereto), ranging from –56 per cent to zero.[24] The form of the calculation implies (what is probably true) that the elasticity of investment with respect to interest will tend to increase as the interest rate rises. If interest rates are assumed to be of the order of 5 per cent, this elasticity shows a range of variation similar to that already shown for the elasticity of velocity with respect to the rate of interest. On the assumption that in the average country net investment might be about half as great as gross investment, these calculations would suggest a value of $xy=\frac{1}{2}$ as a reasonable central assumption for illustrative purposes. However, there is some reason to believe that the market rate of interest constitutes a less adequate measure of the scarcity of funds from the standpoint of investors than from the standpoint of money holders and that the true value of $\frac{1}{x}$ is somewhat higher than has been assumed.

However, even if a value of $xy=\frac{1}{4}$ is assumed, substantial reductions in the money supply would still have to accompany exchange depreciation, in order to hold investment and absorption down to the appropriate levels.

The proportion of investment to the value of output implicit in the calculations underlying Tables 5 and 6 is some 11 per cent in case 1, 10.5 per cent in cases 8 and 10, and 12 per cent in cases 9 and 11. From this and the data given in Table 6, the percentage decline in the money supply that is required in each case to bring about a curtailment of investment of the magnitude shown in Table 5, on the assumption that $xy=\frac{1}{4}$, can be calculated; the results are given in Table 7.

The fact that part of investment is under government control and can be curtailed directly does not necessarily imply that the contraction in the money supply should be any less severe. If the initial magnitude of public investment relative to private investment was correct, the reduction in public investment should, ideally, be no greater than would result in a rational private economy from the increased scarcity of investible funds. In order to obtain the appropriate reduction in private investment, interest rates will therefore have to be raised—and the money supply reduced—to much the same extent, whatever the relative magnitude of the private and public sectors. On the other hand if, to avoid structural unemployment or for some other reason, part of the curtailment which would otherwise fall on investment is applied to consumption, by raising taxes or reducing public expenditure, the

[24] See J. Tinbergen, *Statistical Testing of Business Cycle Theories: A Method and Its Application to Investment Activity* (League of Nations, Geneva, 1939).

TABLE 7. PERCENTAGE REDUCTION IN MONEY SUPPLY REQUIRED ON CERTAIN ASSUMPTIONS

Case	In Connection with a 10 Per Cent Depreciation	In Connection with a Depreciation That Improves the Balance of Trade by 5 Per Cent of the Value of Output
1	12.6	11.9
8	2.3	9.7
9	19.5	11.4
10	5.8	11.0
11	41.8	11.8

degree of monetary contraction required will be correspondingly reduced.

The contraction in the supply of money will have to be achieved by a nonrecurrent contraction in bank credit to the domestic economy. In addition, in order to keep the amount of money at its new lower level, it will be necessary to bring about a permanent reduction in the predevaluation rate of domestic credit expansion. For the devaluation will tend to improve the balance of payments, both on current and on capital account, and hence to diminish the rate of loss of foreign assets by the banking system. If the volume of money is to remain the same, there must be a corresponding decline in the rate of accumulation of domestic assets. The improvement in the balance of payments, the effect of which on the volume of money is to be offset by domestic credit policy, will be greater, and may be much greater, than the improvement in the balance of trade, discussed above. For the flow of capital between A and the rest of the world is likely to shift in A's favor as a result of the depreciation, both because of the rise in the price and scarcity of investible funds in A and because of the weakening or disappearance of any pessimistic anticipations that may have existed initially regarding the future movements of A's exchange rate.

In view of the very great uncertainties regarding (1) the degree of monetary contraction necessary in order to effect a given curtailment of investment and (2) the effect of devaluation on the international flow of capital, it will usually be undesirable to fix in advance any hard and fast targets for the reduction in the money supply, or for the reduction of bank credit to domestic borrowers. Some tentative fixing of targets may well be helpful to illustrate the magnitude of the problem, but in practice it would seem best to look directly to the ultimate objective of preserving or restoring a correct level of demand pressure in the industries producing home trade goods and to turn the screw of credit contraction to whatever point is necessary to achieve this objective.

Mention was made above (see (5), page 309) of an increase in taxation, amounting to 0.66 of the value of output, that would be appropriate in case 1 as a contribution toward meeting the budgetary deficit brought about by declines in revenue and increases in expenditures arising out of a 10 per cent exchange depreciation. To some extent, the additional revenue will doubtless be raised in the form of indirect taxation on domestic absorption: indeed, since the effect of the depreciation, and the accompanying financial policy, is to increase the revenue from direct taxation, and to lower the revenue from indirect taxation, it might well be deemed appropriate to raise all the additional revenue by indirect taxes. If import duties are raised (from the 25 per cent assumed in the above calculations), the only effect will be to curtail the fortuitous incomes of the possessors of import licenses; to the extent that expenditure taxes are increased, however, price levels (cost of absorption) will be raised above those indicated in Table 2. The magnitude of the additional taxation required, expressed as a percentage of domestic expenditure, and the total amount of the price increase occasioned by an exchange depreciation, assuming that half the additional revenue is raised from expenditure taxes, are shown in Table 8, for selected cases.

TABLE 8. ADDITIONAL TAX REVENUE REQUIRED, IN PER CENT OF DOMESTIC EXPENDITURE (ΔT_r), AND PERCENTAGE RISE IN COST OF ABSORPTION (ΔP), ASSOCIATED WITH EXCHANGE DEPRECIATION WHEN HALF THE ADDITIONAL TAX REVENUE IS RAISED BY TAXATION ON DOMESTIC EXPENDITURE

Case	10 Per Cent Depreciation		Depreciation That Improves the Balance of Trade by 5 Per cent of the Value of Output	
	ΔT_r	ΔP	ΔT_r	ΔP
1	0.60	3.7	0.57	3.5
8	—	2.3	—	9.4
9	0.74	5.8	0.43	3.4
10	0.34	2.7	0.64	5.0
11	2.67	6.3	0.76	1.8

Only in case 11 does the tax adjustment that is required to preserve a balanced budget significantly affect the increase in the general level of prices. Perhaps the main significance of these adjustments is slightly to mitigate the advantages enjoyed by a country with high foreign trade elasticities in being able to secure a big improvement in its balance of trade with a small rise in prices. When exchange depreciation accompanied by a relaxation of import barriers is studied in our later paper, we may find these taxation effects to be of considerably greater importance.

Linking of Wages to Cost of Living

The price increases mentioned in preceding sections of this paper have been calculated on the assumption that wage rates are unresponsive to changes in the cost of living. Virtual wage stability was assumed in the industries producing home trade goods,[25] and wages in industries producing foreign trade goods were implicitly assumed to rise only to the extent required to attract labor from the home trade goods industries without causing substantial unemployment in the latter.

If, however, wages rise generally in response to the increase in the cost of living, increases additional to those discussed thus far will clearly take place in A's product prices and cost of absorption. The latter, however, will not rise to the full extent of the rise in wages; only the prices of home trade goods will rise to this extent, the increase in the prices of foreign trade goods being damped down through the influence of demand and supply in non-A. The effect of the general rise in A's wages on the prices of foreign trade goods relative to home trade goods will be the same as the effect of an exchange appreciation of equal magnitude.

Thus, if a depreciation of x per cent leads to an initial price rise of xy per cent, which leads to a wage rise of xyz per cent, there will be a secondary price rise of approximately $xyz\ (1-y)$ per cent. This again, through its repercussion on wages, will lead to a tertiary price rise of $xyz^2(1-y)^2$, and so on indefinitely. However, if $z\ (1-y)$ is positive and less than unity, the price increments will be successively smaller and the aggregate price rise will amount to $\frac{xy}{1-z(1-y)}$ per cent. This price increase will be the higher, the nearer either y or z is to unity, but it will never be greater than the depreciation itself. To take an example: if a 10 per cent depreciation ($x=0.1$) leads to an initial price rise of 4 per cent ($y=0.4$), and if a 4 per cent price rise leads to a 2 per cent rise in wages ($z=0.5$), the ultimate price increase will be approximately 5.7 per cent.

Since an increase in wage rates exercises an effect on the balance of trade similar to that of exchange appreciation, any repercussions of price changes on wage rates, such as those described above, will tend to reduce the improvement in the balance of trade (in terms of foreign currency) that will result from a given exchange depreciation. There-

[25] Strictly speaking, a slight rise in wages even in these industries may have been implicitly assumed—large enough to keep prices of home trade goods from falling as the scale of operation in these industries is reduced.

fore, in order to attain a given improvement in the balance of trade, a larger exchange depreciation will be necessary, and the enhancement which the connection between wages and the cost of living gives to the price increase resulting from exchange depreciation will be greater for a depreciation yielding a given improvement in the balance of trade than it will be for an exchange depreciation of given magnitude.

The formula for the price rise associated with a depreciation yielding a given improvement in the balance of trade is somewhat simpler than that for the price rise associated with a given depreciation, viz., $\frac{xy}{1-z}$. To secure a given improvement in the balance of trade, a given decline in real wages is necessary; and if, for example, money wages are raised by four fifths of any rise in prices ($z=0.8$), prices will have to rise 5 times as much as they would otherwise have done.

Table 9 illustrates the ultimate price increases to be expected for the various cases examined in Table 8, on the assumption of (1) an initial price increase (including the price increase resulting from the adjustment of indirect taxation) as shown in that table and (2) a 50 per cent response of wages to increases in the cost of absorption ($z=0.5$).

TABLE 9. EFFECT OF EXCHANGE DEPRECIATION ON THE COST OF ABSORPTION BEFORE AND AFTER ALLOWANCE FOR WAGE REACTIONS

($z=0.5$)

Case	Effect of a 10 Per Cent Depreciation		Effect of a Depreciation That Improves the Balance of Trade by 5 Per Cent of the Value of Output	
	Before wage reactions	After wage reactions	Before wage reactions	After wage reactions
1	3.7	5.4	3.5	7.1
8	2.3	3.7	9.4	18.8
9	5.8	7.3	3.4	6.7
10	2.7	4.2	5.0	10.1
11	6.3	7.7	1.8	3.6

It is noteworthy that, for a given exchange depreciation, the extent to which the mechanism of the wage spiral multiplies the initial price increase is the greater, the smaller is that initial increase; this mechanism therefore tends to equalize price increases in different cases. For a depreciation leading to a given improvement in the balance of trade, this multiplier is not only much larger than that for a given exchange depreciation, but it is uniform and equal to what it would be in a closed economy.

APPENDIX

Part I

Let q_{x1}, q_{x2}, q_{m1}, q_{m2}, and q_h stand, respectively, for the volume of A's exports, absorption of export goods, imports, output of import goods, and output (or absorption) of home trade goods.

Let $q_m \equiv q_{m1} + q_{m2}$ and $q_x \equiv q_{x1} + q_{x2}$

Let p_x, p_m, and p_h stand, respectively, for the home market price, in A currency, of A's export goods, import goods, and home trade goods.

Let $S \equiv q_m p_m + q_x p_x + q_h p_h$ stand for A's domestic expenditure.

Let t stand for the ratio of p_m to the world market price, in A currency, of A's import goods.

Let c stand for the price of A currency in terms of non-A currency.

Let A's export supply function be

$$q_{x1} = f_1\left(\frac{p_x}{p_h}, \frac{S}{p_h}\right) \tag{1}$$

Let A's import demand function be

$$q_{m1} = f_2\left(\frac{p_m}{p_h}, \frac{S}{p_h}\right) \tag{2}$$

Let non-A's export supply function be

$$q_{m1} = f_3\left(\frac{p_m c}{t}\right) \tag{3}$$

Let non-A's import demand function be

$$q_{x1} = f_4(p_x c) \tag{4}$$

With reference to equation (1), let

$$\epsilon_a \left[\equiv \frac{\delta q_{x1}}{\delta(p_x p_h^{-1})} \cdot \frac{p_x}{p_h q_{x1}} \right] \tag{5}$$

stand for the price elasticity of A's net supply of export goods, and

$$\lambda_x \left[\equiv -\frac{\delta q_{x1}}{\delta(S p_h^{-1})} \cdot \frac{S}{p_h q_{x2}} \right] \tag{6}$$

stand for the elasticity, with respect to domestic expenditure, of A's demand for export goods.

With reference to equation (2), let

$$\eta_a \left[\equiv -\frac{\delta q_{m1}}{\delta(p_m p_h^{-1})} \cdot \frac{p_m}{p_h q_{m1}} \right] \tag{7}$$

stand for the (negative) price elasticity of A's net demand for import goods, and

$$\lambda_m \left[\equiv -\frac{\delta q_{m1}}{\delta(S p_h^{-1})} \cdot \frac{S}{p_h q_m} \right] \tag{8}$$

stand for the elasticity, with respect to domestic expenditure, of A's demand for import goods.

With reference to equation (3), let

$$\epsilon_b \left[\equiv \frac{\delta q_{m1}}{\delta(p_m c t^{-1})} \cdot \frac{p_m c}{t q_{m1}} \right] \tag{9}$$

stand for the price elasticity of non-A's net supply of A's imports.

With reference to equation (4), let

$$\eta_b \left[\equiv -\frac{\delta q_{x1}}{\delta(p_x c)} \cdot \frac{p_x c}{q_{x1}} \right] \tag{10}$$

stand for the (negative) price elasticity of non-A's net demand for A's exports.

Now p_h is assumed to be constant, i.e., $\frac{dp_h}{dc} = 0$

Then, from equations (1), (5), and (6),

$$\frac{dq_{x1}}{dc} = q_{x1} p_x^{-1} \epsilon_a \frac{dp_x}{dc} - q_{x2} S^{-1} \lambda_x \frac{dS}{dc} \tag{11}$$

From (4) and (10),

$$\frac{dq_{x1}}{dc} = -q_{x1} p_x^{-1} c^{-1} \eta_b \left(c \frac{dp_x}{dc} + p_x \right) \tag{12}$$

From (2), (7), and (8),

$$\frac{dq_{m1}}{dc} = -q_{m1} p_m^{-1} \eta_a \frac{dp_m}{dc} + q_m S^{-1} \lambda_m \frac{dS}{dc} \tag{13}$$

From (3) and (9),

$$\frac{dq_{m1}}{dc} = q_{m1} p_m^{-1} c^{-1} \epsilon_b \left(c \frac{dp_m}{dc} + p_m - p_m c t^{-1} \frac{dt}{dc} \right) \tag{14}$$

From (11) and (12),

$$-\frac{dp_x}{dc} = \frac{q_{x1} p_x c^{-1} \eta_b - q_{x2} p_x S^{-1} \lambda_x \frac{dS}{dc}}{q_{x1}(\epsilon_a + \eta_b)} \tag{15}$$

From (13) and (14),

$$-\frac{dp_m}{dc} = \frac{q_{m1} p_m c^{-1} \epsilon_b \left(1 - t^{-1} \frac{dt}{dc}\right) - q_m p_m S^{-1} \lambda_m \frac{dS}{dc}}{q_{m1}(\epsilon_b + \eta_a)} \tag{16}$$

Now, by definition,

$$\frac{dS}{dc} = \frac{d(p_m q_m)}{dc} + \frac{d(p_x q_{x2})}{dc} + \frac{d(p_h q_h)}{dc} \tag{17}$$

It is assumed that any reserves drawn from the production of home trade goods will be employed elsewhere at equally valuable work, i.e., that

$$p_h \frac{dq_h}{dc} = -p_x \left(\frac{dq_{x1}}{dc} + \frac{dq_{x2}}{dc} \right) - p_m \frac{dq_{m2}}{dc} \tag{18}$$

Then, since $\frac{dp_h}{dc} = 0$,

$$\frac{dS}{dc} = p_m \frac{dq_{m1}}{dc} - p_x \frac{dq_{x1}}{dc} + q_m \frac{dp_m}{dc} + q_{x2} \frac{dp_x}{dc} \tag{19}$$

From (11), (13), and (19),

$$\frac{dS}{dc} = \frac{S\left\{ \frac{dp_m}{dc}(q_m - q_{m1}\eta_a) + \frac{dp_x}{dc}(q_{x2} - q_{x1}\epsilon_a) \right\}}{S - p_m \lambda_m q_m - p_x \lambda_x q_{x2}} \tag{20}$$

Let units be so chosen that, in the initial position, $p_x = p_m = c = 1$.

Then, from (15) and (20),

$$-\frac{dp_x}{dc}=\frac{q_{x1}\eta_b(S-q_m\lambda_m-q_{x2}\lambda_x)-q_{x2}\lambda_x(q_m-q_{m1}\eta_a)}{q_{x1}(\epsilon_a-\eta_b)(S-q_m\lambda_m-q_{x2}\lambda_x)-q_{x2}\lambda_x(q_{x2}-q_{x1}\epsilon_a)}\frac{dp_m}{dc} \tag{21}$$

And from (16) and (20),

$$-\frac{dp_m}{dc}=\frac{q_{m1}\epsilon_b(S-q_m\lambda_m-q_{x2}\lambda_x)\left(1-t^{-1}\frac{dt}{dc}\right)-q_m\lambda_m(q_{x2}-q_{x1}\epsilon_a)\frac{dp_x}{dc}}{q_{m1}(\epsilon_b+\eta_a)(S-q_m\lambda_m-q_{x2}\lambda_x)-q_m\lambda_m(q_m-q_{m1}\eta_a)} \tag{22}$$

Let $f\equiv q_{x2}\lambda_x(q_m-q_{m1}\eta_a)$
$g\equiv q_{x1}\eta_b(S-q_m\lambda_m-q_{x2}\lambda_x)$
$h\equiv q_{x1}(\epsilon_a+\eta_b)(S-q_m\lambda_m-q_{x2}\lambda_x)-q_{x2}\lambda_x(q_{x2}-q_{m1}\epsilon_a)$
$f'\equiv q_m\lambda_m(q_{x2}-q_{x1}\epsilon_a)$
$g'\equiv q_{m1}\epsilon_b(S-q_m\lambda_m-q_{x2}\lambda_x)$
$h'\equiv q_{m1}(\epsilon_b+\eta_a)(S-q_m\lambda_m-q_{x2}\lambda_x)-q_m\lambda_m(q_m-q_{m1}\eta_a)$

Then, from (21),

$$-\frac{dp_x}{dc}=\frac{g-f\frac{dp_m}{dc}}{h} \tag{23}$$

and from (22),

$$-\frac{dp_m}{dc}=\frac{g'\left(1-t^{-1}\frac{dt}{dc}\right)-f'\frac{dp_x}{dc}}{h'} \tag{24}$$

Since t is constant, i.e., $\frac{dt}{dc}=0$, $\therefore$ from (23) and (24),

$$-\frac{dp_x}{dc}=\frac{gh'-fg'}{hh'-ff'} \tag{25}$$

and

$$-\frac{dp_m}{dc}=\frac{g'h+f'g}{hh'-ff'} \tag{26}$$

Part II

(a) Let P stand for the cost of absorption.

Then, by definition, and since $\frac{dp_h}{dc}=0$,

$$\frac{dP}{dc}=\frac{q_m\frac{dp_m}{dc}+q_{x2}\frac{dp_x}{dc}}{q_m+q_{x2}+q_h} \tag{27}$$

(b) Let B $[\equiv c(q_{x1}p_x-t^{-1}q_{m1}p_m)]$ stand for A's balance of trade in non-A currency, and B_h $[\equiv q_{x1}p_x-t^{-1}q_{m1}p_m]$ for A's balance of trade in A currency.

Then, since $p_x=p_m=c=1$, and $\frac{dt}{dc}=0$,

$$\frac{dB_h}{dc}=q_{x1}\frac{dp_x}{dc}+\frac{dq_x}{dc}-t^{-1}q_{m1}\frac{dp_m}{dc}-t^{-1}\frac{dq_m}{dc} \tag{28}$$

$\therefore$ from (12), (14), and (28),

$$\frac{dB_b}{dc} = q_{x1}(1-\eta_b)\frac{dp_x}{dc} - q_{m1}t^{-1}(1+\epsilon_b)\frac{dp_m}{dc} - q_{x1}\eta_b - t^{-1}q_{m1}\epsilon_b \tag{29}$$

and

$$\frac{dB}{dc} = \frac{dB_b}{dc} + B_b \tag{30}$$

(c) Let V $(\equiv p_x q_x + p_m q_{m2} + p_b q_b)$ stand for the value of output.

Then, from (18), and since $\frac{dp_b}{dc} = 0$,

$$\frac{dV}{dc} = q_x \frac{dp_x}{dc} + q_{m2}\frac{dp_m}{dc} \tag{31}$$

(d) Let $R\{\equiv q_{m1}p_m(1-t^{-1})\}$ stand for the excess of the home market over the world market value of imports.

Then, from (14), since $\frac{dt}{dc} = 0$,

$$\frac{dR}{dc} = q_{m1}(1-t^{-1})\left\{(\epsilon_b+1)\frac{dp_m}{dc} + \epsilon_b\right\} \tag{32}$$

(e) Let S_r stand for real absorption.

Then, by definition, $\frac{dS_r}{dc} = p_m \frac{dq_m}{dc} + p_x \frac{dq_{x2}}{dc} + p_b \frac{dq_b}{dc}$

$\therefore$ from (18),

$$\frac{dS_r}{dc} = \frac{dq_{m1}}{dc} - \frac{dq_{x1}}{dc} \tag{33}$$

$\therefore$ from (29),

$$\frac{dS_r}{dc} = -\frac{dB_b}{dc} + \left(q_{x1}\frac{dp_x}{dc} - q_{m1}t^{-1}\frac{dp_m}{dc}\right) + (1-t^{-1})\frac{dq_{m1}}{dc} \tag{34}$$

(f) Let $Y(\equiv V + R)$ stand for national income and $Y_r\left(\equiv \frac{Y}{P}\right)$ for real national income.

Now,

$$Y = B_b + S \tag{35}$$

$\therefore$ $Y_r = \frac{B_b}{P} + S_r$

and

$$\frac{dY_r}{dc} = \frac{dS_r}{dc} + \frac{dB_b}{dc} - B_b\frac{dP}{dc} \tag{36}$$

From (30), since $c = 1$,

$$\frac{dY_r}{dc} = \frac{dS_r}{dc} + \frac{dB}{dc} - B\left(1 + \frac{dP}{dc}\right) \tag{37}$$

From (34),

$$\frac{dY_r}{dc} = \left(q_{x1}\frac{dp_x}{dc} - q_{m1}t^{-1}\frac{dp_m}{dc}\right) + (1-t^{-1})\frac{dq_{m1}}{dc} - B\frac{dP}{dc} \tag{38}$$